











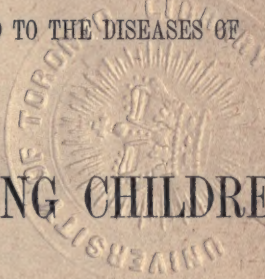
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THE

# ARCHIVES OF PEDIATRICS:

A MONTHLY JOURNAL DEVOTED TO THE DISEASES OF

INFANTS AND YOUNG CHILDREN.



EDITED BY

WILLIAM PERRY WATSON, A.M., M.D.,

ATTENDING PHYSICIAN TO ST. FRANCIS'S HOSPITAL AND THE CENTRAL DISPENSARY (DEPARTMENT OF PEDIATRICS); CONSULTING PHYSICIAN TO ST. MICHAEL'S ORPHAN ASYLUM, JERSEY CITY, N. J.; FELLOW NEW YORK ACADEMY OF MEDICINE, AMERICAN PEDIATRIC SOCIETY, AMERICAN ACADEMY OF MEDICINE; MEMBER NEW YORK PATHOLOGICAL SOCIETY, SECRETARY OF THE STATE BOARD OF MEDICAL EXAMINERS OF NEW JERSEY, ETC., ETC.

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THE  
ARCHIVES OF PEDIATRICS.

VOL. VII.]

JANUARY, 1890.

[No. 1.

TRANSACTIONS  
OF THE  
AMERICAN PEDIATRIC SOCIETY,

HELD AT WASHINGTON, D.C., SEPTEMBER 20, AND  
BALTIMORE, MD., SEPTEMBER 21, 1889.

(Continued from vol. vi. p. 912.)

SCLEREMA NEONATORUM—REPORT OF A  
CASE.

BY WILLIAM P. NORTHRUP, M.D.,

New York.

I HAVE to present to you a typical case of sclerema neonatorum, a disease which is rare in America, occurs seldom in England, and is by no means common in France and Germany. At the New York Foundling Asylum, where have been received seven thousand foundlings in the seven years of my connection with that institution, there has been but this one case. It is rather a medical curiosity, not, however, without interest and importance in diagnosis, although rather hopeless in prognosis and unsatisfactory in treatment. It does not meet the practitioner in his home-practice, but finds its way into foundling asylums from damp subcellars, and from the corners of debauchery and squalor in a great city.

The present case is so typical of its kind, and so fully described in medical literature, that I shall take your time for little more than its simple narration.

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In February, 1885, there were brought to the asylum, by an unknown person, a pair of twins, five days old. Both were girls, weighing about seven pounds each, though one was weaker, jaundiced, affected with sprue, and registered a temperature, on an approved thermometer, five minutes in the rectum, of  $96\frac{1}{2}^{\circ}$  Fahr.

The stronger child had nothing about it to attract further attention, and was accordingly transferred to the nurseries. She died the following July (aged six months), with a diagnosis of cholera infantum.

The child with whom we have to do was given in charge of a nurse, with instructions to try and restore its bodily temperature. All efforts at restoration, however, failed utterly, and to the nurses of the hospital the patient is still known and remembered as the "cold baby" or the "stone baby."

On the seventh day of its life I saw the child with Dr. Henry Blodgett, the resident physician, who believed it to be similar to a case he had seen during his studies on the continent of Europe, and he had already made a diagnosis of sclerosis. What had been described as puffiness of the feet, on entrance, was now hardness, giving to the finger-pressure a sensation of half-frozen tissue. This condition had spread up the legs, was upon the thighs and hips, shoulders, arms and hands, scalp and face; was least marked on the abdomen, most marked on the thighs and arms, was distinct and characteristic on the cheeks. The face was rigid, cold, and mask-like, the thighs and shoulders immovable, the elbows and knees stiff.

One seeing, for the first time, this infant as it appeared on that day, would be struck with its dirty brownish-yellow color, with its smooth, prominent cheeks and chin, its unchanging and constrained posture; and if he were, with blindfolded eyes, to manipulate it, or even put his finger into its mouth, would be struck with its coldness. As for its general feeling, it would be best likened, from its hardness and frigidity, to a half-frozen cadaver.

It emitted a small squeaking cry while being handled, moaning occasionally, but otherwise remained quiet, with closed eyes. Its pulse was not perceptible at the wrist; res-



piration was shallow and quiet; temperature descending. The mercury of a thermometer, in the rectum five minutes, did not rise to the lowest figures of the register. In this condition it lay and cooled and hardened till the ninth day after birth, when it was pronounced dead.

At autopsy, the distribution of subcutaneous hardening was the same as during life, the abdominal wall being least affected. The tissues behaved under the knife like half-frozen fat, hardest and most resisting over the buttocks, thighs, and cheeks. On section of these parts there was no escape of fluid,—serum or blood; the cut was dry, as though dividing half-frozen tissue; no œdema. The skull was normal, its anterior fontanel measuring about a centimetre across its lateral angles. The brain was normal.

In the lungs were scattered dark hemorrhagic masses, distributed beneath the pleura of the anterior and lateral surfaces and base and throughout the organ. The lungs had been fully aerated and were nowhere collapsed.

The heart and great vessels were normal; foramen ovale and ductus arteriosus closed. The pulmonary artery and aorta were believed to be in proper proportions of size to each other and to the heart's cavities; the partitions, chambers, and muscles of the latter being, severally, of normal weight, size, and quality of tissue.

*Kidneys.*—Urates were collected in the tubuli uriniferi, showing fine red diverging lines upon the congested pyramids. The tissues of the organ were normal. Stomach and intestines were normal. Liver was normal, as was the umbilical vein.

Microscopical examination of the liver showed a moderate degree of congestion; otherwise it was normal; kidneys also normal.

The dark masses in the lungs were composed of fresh blood-cells in the alveoli, connective tissue, and lymph-spaces. There were no swollen epithelia, and no evidence of bronchitis or foreign bodies.

Examination of the skin and subcutaneous tissue was made from specimens selected from the following locations,—viz., abdomen, anterior aspect of thigh, calf, dorsal and plantar surfaces of the foot.

One leg was removed at the hip-joint, and the vessels injected with gelatin blue, as recommended by some writers, to test the permeability of the cutaneous capillaries. For control examinations, specimens were removed from the same locations in two other infants of similar age. These selected specimens were hardened in different approved fluids.

The capillaries took the blue injection well, showing so excellently the vascular net-work that the specimen was thought worthy to serve for class instruction in normal histology. In the uninjected specimens no vessels were observed to be abnormal. The connective-tissue bands and adipose tissue could not be pronounced in any way unlike the type of the two normal control specimens, neither was there any abnormality to be detected in the lymphatics. In short, a morphological examination disclosed no lesion and suggested no cause for the condition found in the subcutaneous tissue before death.

I may state that my own examination of these specimens has been supplemented with partial examinations by expert general pathologists and by skin specialists, and the report as given above is in conformity with their opinions.

I have recited the case of a feeble twin, born in mid-winter, in squalor, which developed progressive and extended subcutaneous hardening, coincident with a gradual and excessive depression of the body temperature, ending in death on the ninth day.

A morphological study of the tissues has given but negative results.

I shall not take your time to give what can be found in every French and German cyclopædia of medicine.\* Suffice it to say, I have recited a case which is typical as there described.

The Surgeon-General's office has kindly furnished me references to five American cases. Only one of these closely approaches the type seen in the large foundling houses of

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\* "Sclérème du Nouveau-Né," "Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques," vol. xxxii. p. 603; "Sklerema Neonatorum," "Real-Encyclopädie der Gesamnten Heilkunde," 1889, xviii. 341.



France and Germany, and that is a case reported by Dr. Ellen A. Ingersoll, of Canton, Ill.\*

One case referred to was forty-five years old.† In one the hardening was local, lasted six months, and the patient was still living when the case was reported.‡ Another was reported as improving from what seemed a case of sclerema.§ Another after four to five weeks recovered.||

The cases from which it is necessary to diagnosticate sclerema of the new-born are those of œdema.

It cannot be too plainly stated that sclerema, outside of foundling asylums and the most squalid districts of the large cities, is very rare in this country. No doubt the report now presented will bring to light cases which answer the descriptions here rehearsed; but let it be remembered *œdema* of the new-born, also, conforms, in part, to the main features of the description. In *œdema* there is a lowering of the body temperature, and the œdematous regions may become firm, but neither of these symptoms reach the degree to which they attain in sclerema.

As an illustration, I may say I have held the above recorded case four and a half years, expecting to find another to study in connection with it. In that time many babies have been shown to me, both hardened and cold, but, when examined, these features have not corresponded in degree, at all, to the case which did not raise the mercury to the lowest record figure. So I beg you be on your guard; see if the œdema pits, under finger-pressure, are symmetrical, confined to the lower extremities or to the dependent portions of the body. There is a feeling of immobility about sclerematous tissues, as

\* Ellen A. Ingersoll, "Sclerema Neonatorum," *Peoria Med. Month.*, 1887-88, viii. 240.

† H. C. Gardinier, "A Case of Sclerodactyle with Diffuse Scleroderma," *Am. Jour. Med. Sci.*, Phila., 1889, n. s., xcvii. 15-25.

‡ C. D. Smith, "A Case of Sclerema or Induration of the Cellular Tissues of an Infant, with Remarks" (read before the Society of Medical Inquiry), *N. Y. Jour. Med.*, 1854, xii. n. s., 190-194.

§ A. R. Robinson, "Sclerema Neonatorum," Case, *Arch. Dermat.*, New York, 1882, viii. 337.

|| C. C. McDowell, "Case of Scleroderma occurring in a Patient Three Weeks of Age," *Maryland Medical Journal*, Baltimore, 1877, 1-203.

though they were a compact mass, the skin not moving on the muscles, and not to be gathered up into rolls. Sclerema begins in the lower extremities mostly, but it later selects the regions of accumulated fat, and shows peculiarly this tendency when the cheeks are involved.

In the case given by Dr. Ingersoll the labor was normal, the child weighing seven or eight pounds. On the third day sclerema appeared, involving the scrotum and anterior surface of the thigh. It then passed to the neck, chest, and superior extremities, and death occurred in forty-eight hours from interference with respiration. The muscles of respiration and of deglutition were supposed to be sclerosed. The mother was thirty-five years of age, and this was her eighth pregnancy. She had been in liquor for several days prior to confinement, and was much exposed in midwinter.

If I were to present a composite picture of cases of true sclerema neonatorum, it would have the prominent points of the case I have here presented.

In regard to the pathology of this affection, I find that almost everything has been touched upon.

Each observer who has written on sclerema has given some explanation founded upon this individual study. One has found fatty heart, one faulty innervation of the heart; several have found it associated with, and probably due to, imperfect expansion of the lungs and defective hæmotosis; several have attributed it to obstruction of the cutaneous capillaries and lymphatics and suppression of the sweat functions, etc. Parrot,\* to whom all subsequent writers refer with great satisfaction, found all the elements of the skin changed, some increased, some diminished, and always in infants who were in the last stage of an obstinate intestinal disease.

The most satisfactory explanation for the hardening of the subcutaneous tissue in sclerema (skin-bound) of the new-born

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\* J. Parrot, "Endurcissement L'Athrepsie," *Clinique des Nouveau-Nés*, Paris, 1877, pp. 116, 118, 121; "Œdème," p. 205; C. Henry, "Verhärtung des Zellgewebes," *Handbuch der Kinderheilkunde*, Bd. ii. 1871, pp. 40-158; Meigs and Pepper, "Sclerema," "Diseases of Children," Phila., 1883, p. 976; Eustace Smith, "Sclerema," "Diseases of Children," New York, 1886.



is based on the statement of Langer,\* that children's fat contains much more palmitin and stearin than that of adults, and solidifies upon moderate depression of temperature.

#### DISCUSSION.

DR. HUBER.—I have in mind a child, the subject of congenital syphilis, who died at the age of a few months, presenting the appearance described. It presented all the physical characters of sclerema, although several months old. The tissues did not seem to be hypertrophied, but were very hard.

DR. KOPLIK.—This is very common in the foundling asylums of Europe. In Prague, Epstein has shown me cases of this condition. He does not regard it as a disease, but as a symptom preceding death. I have seen cases in midsummer as well as in winter. Many of these cases seem to be very atrophic infants, the subjects of congenital syphilis. I did not know that these cases were considered rare on this side of the water. In my own dispensary I have seen them.

DR. HOLT.—An unusual case had come under my observation, which, although it differed in some respects very much from the classical picture of sclerema, seemed certainly to belong to the same class of cases.

The infant came under observation when thirteen days old, and had a large cephalo-hæmatoma. On the shoulders, back, arms, neck, and in the cheeks were areas resembling sclerema, covering almost the whole surface; they were separated by small fissures; they were hard and board-like, cool, and did not pit on pressure. There were no areas on the abdomen, chest in front, forearms, or lower extremities.

The child was well nourished, and the rectal temperature at no time subnormal.

The scleremic patches slowly disappeared without treatment, and at the end of five months were to be felt on the shoulders only.

Sclerema neonatorum he thought to be an exceedingly rare disease in this country. This was the only case bearing any resemblance to it which he had seen here.

THE PRESIDENT.—I am convinced of the rarity of sclerema. I have not seen a case in twenty-five years. I have seen but two cases of the affection. At this time the etiology was believed to be that of ordinary oedema. But that cannot be the case. The parts are very hard and do not pit upon pressure.

What has been said in regard to the chemistry of the fats is

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\* Ludwig Langer, *Wiener Sitzungsbericht*, 1881.

certainly more suggestive. The fat of the newly-born child is quite different from that of the adult. In the adult the chief constituent is oleic acid, while palmitin and stearin form only a small part, about nine per cent. The fat of the new-born contains four times as much palmitic acid and twice as much stearic acid as that of the adult. Both of them melt at a higher temperature than the former. Thus it would appear that they harden when the temperature of the body sinks much below the normal, as it will in sclerema.

DR. NORTHRUP.—Since I found this case, in 1885, I have been looking for another, but have not yet met with it. My attention has frequently been called to supposed cases, but the appearance did not correspond. I think that there is some misunderstanding as to what constitutes sclerema. The typical picture makes it a rare and fatal condition. The cases of recovery which have been reported have been localized.

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## TWO FATAL CASES OF BILIARY CIRRHOSIS (CONGENITAL PERNICIOUS ICTERUS) IN THE SAME FAMILY.

REPORTED BY MARCUS P. HATFIELD, M.D.,

Chicago.

CASE I.—Mrs. St. J., aged forty, VIIpara, was confined on the night of August 22, 1889. Her attending physician, Dr. J. R. Kewley, of this city, informs me that the labor was normal, with the exception of a mild post-partum hemorrhage and too copious flowing for the first three days of her lying in. The child, a boy of seven and seven-eighths pounds, was well nourished, but almost immediately vomited freely a frothy, greenish-yellow liquid, which was so copious as to gush from the nostrils and trickle into the larynx, producing severe coughing. The infant was liberally covered with sebaceous material, stained a greenish yellow from the amniotic fluid, which had been present in large quantity and was of the same yellow color. The skin at first presented but little, if any, evidence of jaundice, but it speedily became icteric, reaching its maximum discoloration upon the fourth day. At this time, when first seen by the writer, the child's sclerotics, secretions, and entire cuticle were of an intense lemon-yellow



hue, so brilliant that it was difficult to conceive how a living human being could become thus pigmented; even the mucous membranes and the secretions of the mouth and nose sharing in the jaundice. Assimilation from the first was defective. After the second day, until within a few hours of its death, the babe was unable to nurse, and was nourished entirely on small quantities of breast-milk administered with a spoon; but even this it was unable to digest, although the mother's milk appeared perfectly normal. At irregular intervals there was vomiting of yellowish or greenish mucus, etc. At times the child was quiet and slept well; at others, fretful and crying; during the first week (even in sleep) twitching of hands, etc., would occur. The urine was rather scanty and deeply stained the napkins, and for the first few days red and yellow lithates were freely deposited upon the diaper. The stools, after the ordinary amount of meconium had passed, presented the yellowish staining of bile more or less mixed with green, and at all times showed undigested milk-curd. From the second day hemorrhagic petechiæ were present on the face and trunk, but at no time could suppuration be found around the umbilicus. The cord was not separated at death (thirteenth day); but on September 1 (ninth day) there was a slight detachment with very free hemorrhage and previous occasional oozing of blood, readily controlled by hot water and a compress. At this time (ninth day) about a quarter inch of desiccated cord was removed, the remaining part found moist, looking something like a slough, and taking on a putrid odor from the time of the first hemorrhage. Death was painless, the child becoming very quiet for a few hours preceding death, the respirations becoming shallower and more infrequent, until it finally ended its life with a final flickering gasp of exhaustion.

An *autopsy* was held upon the child, a few hours after its death, by Drs. Kewley and Hatfield. The body was found, as might be expected, quite emaciated and still tinged yellow, but with more of a greenish tinge than when first seen,—a change which was noticed to have been taking place for three or four days before death. Lanugo was profuse, and the skin leathery to touch, in tint and feel closely resembling the drug-

gists' so-called chamois skin. The umbilical cord, although it was the thirteenth day, had not properly come away, but had left a dry, fetid stump behind, which protruded from the umbilical ring. No evidence of umbilical suppuration. Neither was there any evidence of umbilical arteritis or phlebitis. The subcutaneous fat was yellower than normal and the peritoneal fluid as yellow as bile. The stomach was not opened, as it and the intestines were flaccid and almost empty. The lacteals showed no evidence of disease, nor did the bladder, which was fully distended with saffron-colored urine. The heart was normal, lungs the same, except that they were tinged yellow at their margins. The right pleural cavity was about half filled with a bloody fluid, none of which was saved for examination; nor were the kidneys examined, as the writer now regrets. The spleen—brick red and very friable—was with the liver removed for examination by Dr. Elbert Wing, the pathologist of Chicago Medical College, whose report is herewith given.

*"Gross appearance of liver.*— $5 \times 2\frac{3}{4} \times 1\frac{3}{8}$  inches, dark blackish brown, surface uniform in color, capsule unchanged; firmness under palpation normal; cut surface same color as serous surface, with an added superficial tinge of greenish yellow flecked with very minute whitish specks and streaks, which suggest possible cirrhosis; not much blood in branches of vena cava, their surface greenish yellow, but not stained; cut surface quite moist and apparently somewhat softened.

*"Spleen.*—Small petechial spots scattered through the organ. Fragment only furnished. Apparently much enlarged; dark red in appearance, very soft; cut surface deep red color, soft, moist; Malpighian bodies hardly distinguishable, trabeculae not distinguishable.

*"Lung.*—Only small pieces furnished. Greenish-yellow tinge over all; areas of red blotches; vessels not visible; blood only partially to be washed out; floats, but not freely; consolidation not certain; firm and elastic to touch.

*"Pancreas.*—Organ somewhat finer than normal on palpation; same greenish-yellow tinge over and throughout the organ.

*"Microscopical appearance of liver.*—1. There is a large



number of circumscribed, circular, and ovoid, occasionally branching, islands of connective tissue, which surround the gall-ducts. An occasional aggregation of leucocytes lie in the periphery of the lobules, but in no case surround them.

"2. The capillaries are apparently thicker than normal, and in large areas of the tissue are irregular in size, contour, and distribution; they contain a few leucocytes.

"3. In many places the amount of connective tissue, which represents the reflections of the capsule of Glisson, is largely in excess of normal.

"4. Scattered over the sections, in much the same general manner as the islands of leucocytes are distributed in chronic syphilitic hepatitis, there are clumps of small, round, solid nuclei, whose arrangement is that of those surrounding a gall-duct in some cases, and in others so strongly suggests the same arrangement that there can be little doubt that they are such.

"5. The petechial spots, mentioned in the description of the gross appearances, cannot be seen in the stained and cleared section.

"6. The capsule is moderately thickened.

"7. The greenish-yellow stain, mentioned in the description of the microscopic appearance, is due to (a) a granular pigment, which is distributed irregularly in the lobules, but which, taken in relatively large areas, is considerably more abundant in some parts of the sections than in others; (b) a greenish-yellow stain which lenses of a power of three hundred and twenty-five diameters does not resolve into granular matter.

"8. The central veins of the lobules cannot be clearly made out.

"*Lung tissue.*—1. There is a small number of areas in which the alveoli are filled with epithelial cells and leucocytes. These areas vary in size, but are all small.

"2. The connective tissue which surrounds the arteries is in most cross-sections increased in amount, and in some markedly so.

"3. Throughout the sections there are areas of hemorrhagic extravasation. Some of these are quite large and are evidently the petechial spots mentioned in the description of the gross appearances of the tissue.

"4. The pleura is apparently thickened, and there are long, slender processes of connective tissue which extend from it down into the tissue of the lung."

*Conclusions.*—The hepatic lesions are those of biliary cirrhosis, or that in which the hepatic cells undergo destructive changes, and connective tissue fills the gap. In this variety of cirrhosis the newly-formed connective tissue shows little tendency to shrink, and hence the French authors have given it the name of *cirrhose hypertrophie avec ictère*. The disease, as manifested in adults, is one of slow duration, usually of one or two years, and the prognosis fatal. Where obstruction of the common duct cannot be demonstrated, the disease must be regarded as primary. The lung lesions are analogous to those found in the liver.

CASE II. was the sixth child of the same mother. Neither of the physicians in attendance upon the seventh confinement were with her at that time, but the mother, who is a more than usually intelligent woman, gives an account of this child, which is almost an exact counterpart of the one just detailed. The child was apparently well nourished and healthy, but soon developed intense jaundice, and died on the thirteenth day, probably in a slight convulsion. No post-mortem was made upon the first, but there is every reason to believe that the two cases were identical, and that both were well-marked cases of biliary cirrhosis. This is usually supposed to be a disease of later life, for, so far as the writer is informed, there is no account of its characteristic lesions being found in so young a child. There can, however, be no doubt in this case. The microscopic slides were exquisite, showing beyond a doubt the characteristic, circumscribed, cirrhotic areas and loculi left by the destruction of the liver-cells. This lesion Strümpel claims is due to the destructive effect of retained bile in the liver, and differs in every way from ordinary cirrhosis of that organ. The conviction, however, forces itself upon the writer that the etiology of these cases must be found somewhere in the prenatal life of the child. Bile was secreted to excess before birth, as proved by the color of the smegma and the bright yellow amniotic fluid at birth.

The fact that the preceding child, under the care of a dif-



ferent nurse and other physicians, died in exactly the same way strongly militates against icterus due to like bacterial infection. If due to infection, it must have been in both cases autogenetic rather than suppurative or puerperal. The mother at both times, it must be remembered, had a satisfactory child-bed, with the exception of post-partum hemorrhage; in the latter case without an unfavorable symptom. We must, therefore, look to the child itself rather than its postnatal surroundings for the cause of its death. The cause must have been congenital, for its effects were manifested in a few hours after birth. Furthermore, from the steady progress of the case to a fatal termination, we may infer that the cause of this pernicious jaundice was organic rather than functional, and we might anticipate finding this cause either in the liver or the spleen, possibly in both. Dr. Wing's report inclines us to the belief that the liver was primarily at fault, and that the lesion was of the nature of circumscribed or biliary cirrhosis.

No syphilitic or constitutional taint was found upon either side of the family. The mother's vigor was but slightly, if any, impaired from her frequent childbirths and hard work. She now suffers only from perineal rupture and internal hemorrhoids, which at times bleed freely. The father has at times suffered from severe sciatica of right leg, accompanied by small abscesses. These attacks recurred with increasing frequency of late years, and are traced back to an injury of the hip from the explosion of a full cartridge-box during an engagement in our late war. The fragment of shell propelled by the explosion produced a very severe contusion, but no wound. Aside from the above, which at times confines him to the house for one to three weeks, he is in good health.

## CARPO-PEDAL CONTRACTIONS—ONE MANIFESTATION OF TETANY.

BY CHARLES WARRINGTON EARLE, M.D.,

Chicago.

THE exhaustive articles by Professor J. Lewis Smith, published in the ARCHIVES OF PEDIATRICS during the past three or four months, make it entirely unnecessary for me to add a single word on this subject. But inasmuch as my first case was recorded in 1882, and at that time in all paediatric literature at my command it was only mentioned incidentally, and in systematic works on diseases of children at this time the subject of tetany as distinct from tetanus is not fully brought out, it may be profitable for us to very briefly consider it.

In March, 1882, I was called to see Lillian Walker, aged two and a half years, whom I found well nourished, but, from a slight indigestion, suffering with a troublesome diarrhoea. A day or two previous she had complained of pain in her feet and lower limbs, and had experienced a slight difficulty in deglutition. There was some little evidence that she had swallowed a small button, and she was, moreover, unduly nervous. The following day she ate very heartily of fried potatoes, and a short time following this it was noticed that her hands and feet were in a peculiar position and painful to the touch. During the day the hands became flexed and the feet extended, and both hands and feet—particularly the latter—considerably swollen. The muscles in the posterior part of the leg were also involved. The child frequently cried out in pain, but the pulse and temperature were normal, and there was very little, if any, constitutional disturbance. She was ordered a laxative, to be followed with a proper dose of bromide of potassium in combination with a small amount of chloral hydrate and tincture of Calabar bean. The feet and hands were ordered to be enveloped in hot cloths and moderate



counter-irritation (mustard) to the spine. In five days the child was well, and, as far as I am informed, has never had a recurrence of the difficulty since.

CASE II.—Baby Arnold, aged six months. She was teething; had a very decided tendency to skin eruptions of various kinds, and was bottle-fed. Had painful contractures of hands and feet, which were at the same time considerably swollen. There were no constitutional symptoms of any moment, although the temperature was  $99\frac{1}{2}^{\circ}$  some portions of the time. In ten days all pain, swelling, and deformity had disappeared, and the child was as well as usual. I should add that about one month subsequent to this, after an illness of only one or two days, the child died from cholera infantum.

My first case was a strong, robust, and well-nourished child, and the recovery was complete. The second case was a child whose nourishment never satisfied me, although the parents devoted themselves assiduously to its care. It was always having some skin difficulty, and never had a ruddy, healthy appearance.

The first clear descriptions of this disease were given between 1830 and 1835 by French physicians who were engaged in studying particularly this difficulty at that time. The most exhaustive article previous to those by Professor Smith, in the English language, is by Erb, vol. xi., Ziemssen. A more careful search, however, has revealed the fact that long before the French described it, even as early as 1815 and 1817, carpo-pedal contractures were described in English literature. In Eberlee's "Practice" (1831) and in John Clark's "Commentaries," about this time, in vol. xii. *Edinburgh Medical Journal*, allusions are made, and in the *Medico-Chirurgical Journal* (vol. iii., 1817) Dr. James Johnson uses the words "carpo-pedal spasm."

The word *tetany* was introduced by Dr. Lucien Corvisart in 1851, and has been very generally adopted, although the exact differentiation between the terms *tetany* and *tetanus* is not, to my mind, very clear. Carpo-pedal contractions as a name is not enough. Contractions in the feet and hands were the principal symptoms in my cases, but in others many different muscles may be the point of attack. The muscles of

the head and back and abdomen are sometimes involved, and rarely those of the face, tongue, and those of mastication. The malady becomes dangerous to life as the diaphragm becomes the point of spasm.

*Causes.*—It is conceded by all authorities that it is among children that we find this condition existing with greatest frequency, although people of all ages may become its victims. Pregnancy and the puerperal state seem to be predisposed to it, and certain occupations exercise some influence in its production. Disturbances in the alimentary canal, such as indigestions and exhausting diarrhoeas and intestinal worms, cause it. Constipation in some cases seems to be a cause. To these etiological factors the old authors add dentition. Professor J. Lewis Smith narrates a case in which the contractions continued for three weeks, which quickly abated when several imprisoned teeth escaped. Exposure to cold and those causes which seem to produce in certain people the development of rheumatism are mentioned as exciting causes of this disease. Tetany also takes place after certain prostrating diseases, and it is possible that an inherited nervous condition may predispose to it. Professor Smith observed it so frequently in the early part of 1889 that the term epidemic could very properly be applied to it. The influence of reflex irritation as a cause of this difficulty has been closely studied by Romberg, who confesses his inability to make positive assertions, but who believes it demonstrated by both experiment and clinical observation.

Herz (in *Jahrbuch für Kinderheilkunde*, xviii. 2) says that clinical phenomena indicate that the disease is due to anæmia of the cord.

*Symptoms.*—In a child these must be mainly, if not wholly, objective; in adults premonitory symptoms are noticed in some cases. The peculiar shape of the feet and hands, their rigidity and pain, which is experienced on pressure, are the most marked symptoms. In the cases under my observation the hands have been flexed and the feet extended. The feet, particularly the upper parts, have been swollen. The spasm has been constant, not intermittent, as noticed by some writers.

While the exciting cause (in the cases under my observation



always in the digestive tract) is present, there is some fever with its usual accompaniments, which disappear usually a short time after the evacuation of the bowels. There has been slight nervousness, but nothing like a general convulsion. The contractions have always been bilateral, and have been in both upper and lower extremities. It has not been my fortune to see cases of such severity as to have spasm of the abdominal or thoracic muscles, and no embarrassment in respiration has taken place, —all these symptoms are recorded by some observers.

The electrical behavior of muscles in this disease has been noticed by Benedict and Kussmaul, and consists mainly in an increased excitability excepting in the branches of the facial nerve. What is known as Trousseau's symptom is that if the larger arterial and nerve-trunks of the contracted muscles are compressed the contraction is increased. As to the reliability of this symptom I cannot speak from experience.

The duration of tetany is from a day or two to several weeks or months, and there seems to be a tendency in some subjects to a recurrence.

The prognosis is favorable, particularly in children. In fatal cases there is usually some pre-existing disease or some serious complication not due to tetany.

The diagnosis will be made by the peculiar grouping of symptoms, the characteristic positions of the extremities, the bilateral tendencies, and the absence of cerebral and general disturbances. Tetanus of the new-born generally takes place within a few days after birth; tetany, not till the time for gastro-intestinal disorders is reached. The muscles of mastication are involved early in tetanus; those in the extremities early in tetany; and those of mastication, in all probability, not at all. In tetanus all the symptoms rapidly tend to become more and more serious; in tetany the history is towards recovery.

*Treatment.*—Remove the cause, particularly if it arises from the retention of undigested food. Envelop the limbs in hot cloths, and administer full doses of the bromide of potassium. To this remedy, which in most cases is all that is needed, may be added chloral hydrate, and from its effect in other similar diseases the Calabar bean seems to be indicated.

PROLAPSUS RECTI DUE TO LARGE STONE IN  
THE BLADDER OF A CHILD THREE AND A  
HALF YEARS OLD: REMOVAL: CURE.

BY A. CAILLÉ, M.D.,

New York.

MARY X., three and a half years old, came under my notice as a dispensary patient in November, 1888, with the following history, as furnished by the mother: About one year before presentation the child's gut was found prolapsed after each stool, and she appeared to be in great pain in passing her urine. She was taken to a number of physicians and dispensaries for treatment, and presented at almost all the clinics as a case of inveterate and severe prolapsus recti, and many methods of treatment were tried without affording the child the slightest relief or improvement. At my first examination I found the child to be anæmic, nervous, and cachectic in appearance, and suffering from diarrhœa and bronchitis. The rectum was prolapsed two inches, and during the examination it came down fully seven inches, and presented a slightly bleeding surface. A straining effort on the part of the child forced urine from the bladder, which was collected, and found to contain pus and much epithelium, as evidence of cystitis.

The sphincter ani was relaxed to such an extent that three fingers could be passed through it without an effort. The child was then anæsthetized, and a more careful examination showed the presence of a large stone, free, in the cavity of the bladder.

Speedy removal of the stone was suggested, and the suprapubic operation decided upon, on account of the large size of the stone and the facility of access by this operation.

The bladder was first thoroughly irrigated with a warm solution of boro-salicylic acid, and, after division of the skin in the *linea alba*, the patient was put in Trendelenburg's position, with head low and raised pelvis, by which means



it was comparatively easy to avoid the reflection of the peritoneum.

It was not found necessary to raise the bladder by inflating the rectum,—two fingers of an assistant passed into the rectum being sufficient to bring bladder and stone into a convenient position above the symphysis. The bladder was now incised and the large stone removed with some difficulty, thereby producing slight laceration of the margin of the incised bladder.

Owing to this slight and unavoidable laceration primary union was not contemplated, but the bladder was sutured, nevertheless, and the wound filled with loose iodoform gauze, and the usual antiseptic dressing applied. The temperature of the patient was normal throughout the entire healing process, except on the third day after operation, when it rose to 102° F. for a few hours. The process of healing was all that could be desired, excepting a small leak in the suture, which was detected on the fourth day. At the end of three weeks the wound had closed, and the child was discharged cured.

During the time of convalescence the rectum came down once, and not again afterwards. The stone—which I here show you—is twice as large as a pigeon's egg and weighs twenty grammes.

Its presence in the bladder of the child had evidently caused the rectum to prolapse as a direct consequence of frequent straining, and its removal permitted the parts to assume their normal and natural condition.

#### DISCUSSION.

DR. FRUITNIGHT.—In a paper which I read one year ago on urinary concretion in children, I made the statement that persistent prolapse of the rectum was nearly always an indication of stone in the bladder, and should always suggest an examination of that viscus.

## PRACTICAL POINTS IN THE DIAGNOSIS AND TREATMENT OF MALARIA IN CHILDREN.

BY HIRAM N. VINEBERG, M.D.,

New York.

THE vague expression, "a touch of malaria," is heard as often in the diagnosis of the diseases of children as it is in that of the diseases of adults. This diagnosis, which is at once popular and covers a multitude of physical sins in the lay mind, is resorted to by the physician, not so much from a desire to seek shelter under a mantle of ignorance, as it is because he is too lazy or too busy to examine the child thoroughly. In the present state of medical knowledge, in spite of recent strides, protection under a mantle of ignorance is not only excusable but at times unavoidable. We use the term "neurasthenia," and are glad to have it for a set or group of symptoms of the pathology or nature of which we are in utter ignorance; but with malaria, however, the case is entirely different. Here we have a distinct poison, definite pathological processes, and a set of symptoms which, although they may be variable, are, on the whole, tolerably uniform.

In my opinion, the vagueness in the diagnosis of malaria in early life has been, in a measure, propagated by the system of elevating a single symptom into pathognomonic value. One would diagnosticate the affection from a peculiar state of the tongue; another, from the color of the skin; and a third, from some peculiarity of an abdominal pain. It would, in my mind, be just as scientific to make the diagnosis of pneumonia from some peculiarity in the cough, without a thorough physical examination of the chest, as it would be to make the diagnosis of malaria without noting the condition of the spleen, because the patient presented a dark-brown tint of the skin, or had headache, or because the tongue was coated with a brownish-yellow fur. One often hears it said, "Well, what does it matter about a correct diagnosis of malaria? If you

suspect it, you give quinine and settle the point." But it *does* matter to the patient's welfare, and it *ought* to matter to the physician's self-respect, whether he treats disease with the best knowledge that is within him or at random by firing "shot doses" of medicine at it. Then, a few doses of quinine does not always cure malaria, while it may cure an entirely different affection. But of the value of quinine as a therapeutic test, later on.

It is my intention, therefore, in this article, to bring under review the most prominent and reliable symptoms of malarial poisoning as observed in early life, discuss each symptom separately, and thereby endeavor to estimate its value in forming a diagnosis of that affection. Afterwards the different diseases which may be mistaken for malaria will be discussed and an effort made to indicate their points of differentiation.

I have nothing particularly new or startling to offer. My object is merely to emphasize a few well-established facts that seem in danger of being consigned to oblivion, and to present some practical points that I have had to learn for myself, and the mention of which I only found, afterwards, scattered through a literature which, although not extensive, is not easily accessible. My remarks are based upon a careful study of eighty cases of malaria, in early life, that came under my observation in dispensary and private practice during the past eighteen months, and on a close perusal of the literature to which I have referred.

The prominent symptoms and signs of acute malaria are chills, convulsions, fever, sweating, enlargement of the spleen, hæmatozoa in the blood.

*Chills.*—In children the chills, as a rule, do not set in so abruptly as in the adult. There is usually a prodromal stage of a few days' duration characterized by malaise, a tired feeling, and lack of energy. The child does not play and run about as usual, and suffers from loss of appetite. In very early life—that is, under two years—chills are said never to occur, but I have observed distinct chills in one patient nineteen months old, and in another two years old. Instead of a chill, the mother, if observant, will usually notice that of a sudden the child grows drowsy, frequently yawns, and stretches



itself several times. The lips and finger-nails become blue, while the little hands feel cold to the touch. Frequently twitching of the eyelids will be observed, and this phenomenon may be a forerunner of a convulsive seizure. In older children chills occur as in the adult, although they are seldom so pronounced or of such long duration. Sometimes they are entirely absent. Some of my patients complained merely of a chilly sensation running down the spine; others, again, had never even complained of feeling cold. The period of the day at which the chills occur varies very considerably. In my cases the chills—in fully half the number—took place towards evening, between 2 and 8 o'clock P.M.; of Holt's (one hundred and six cases), in thirty-five the chills occurred in the forenoon, and seventy-one in the evening; Bohn's statistics correspond to the foregoing. The chills in early life are irregular in their recurrence. The mother will often tell you that they began at first late in the afternoon, but that each subsequent attack occurred earlier, so that the latter ones have taken place in the morning, or the reverse may have been the case; they began in the forenoon and ended by recurring in the afternoon or evening. The most common type in children, according to some observers, is the quotidian. Of Bohn's four hundred and sixty-five cases, two hundred and forty-five were of this type.

Next in frequency is the tertian form, which comprised two-thirds of my cases. The difference in statistics by different authors depends upon the severity of the epidemic; the more severe exhibiting the quotidian, the less severe the tertian form. Other forms are rare.

Recurring chills are common to other diseases than malaria. They are witnessed in hectic fever, in ulcero-endocarditis, in pyæmia, and whenever suppuration is taking place in deep-seated parts. Hectic fever is most likely to be the attendant of some chronic process, such as phthisis of the lungs, which is not an uncommon disease in childhood. When we recall the fact that malarial chills may frequently occur in the evening, the period at which the chills of hectic fever usually recur, it may be readily conceived that an error could easily be committed, if too much dependence were placed upon this symp-

tom alone. The chills attending pyæmia and suppuration of the deeper parts seldom exhibit the same periodicity as those of malaria, nor the same freedom from febrile disturbance in the intervals. Further, the chills of pyæmia are often characterized by the profuse sweating which immediately follows them rather than by an active development of the fever. In the early stages of pyæmia, however, it will not always be easy to tell whether the chills are of pyæmic or malarial origin, particularly if the patient has not recently undergone an operation or the source of the pus is not evident. I retain a vivid recollection of a case that I saw in the Montreal General Hospital during my student career. A boy, æt. five years, was taken ill with recurring rigors, followed by fever and sweating. At first a diagnosis of malaria was made; but later on, as metastatic abscesses were observed in various parts of the body, the diagnosis was changed to pyæmia; but no suppurating lesion, as the source of the disease, could be detected. The hope of finding this, even at the autopsy, was almost given up when that most careful and acute observer, Dr. Wm. Osler, then of Montreal, began dissecting out every bone of the body, and finally found a small periosteal abscess of the tibia near the malleolus, which had not given rise to pain, and was overlooked during life. Ulcero-endocarditis is fortunately a rare disease. It forms one of those hidden rocks in medicine which the most skilled and experienced pilot in diagnosis is likely to run against. It is seldom a primary disease in childhood, but is usually secondary to rheumatism, suppurative disease of the bones or joints, diphtheria, and the infectious diseases. A physical examination of the heart will frequently, but not always, detect an endocardial murmur.

Even in subacute gastritis I have more than once observed the recurrence of chills, exhibiting apparently a periodic type.

The following case in private practice offers a pregnant example: X., æt. fourteen years, of a mobile nervous temperament, was taken ill on June 6 with a chill, malaise, fever, and pain in various parts of the body, but most pronounced across the front of the chest. The tongue was coated and the bowels were loose. The rectal temperature registered  $104^{\circ}$  and the pulse was 120. A careful examination of the chest detected

nothing abnormal. There was no enlargement of the spleen. On the following day he was quite free from fever and felt well, excepting that his appetite was poor and he was rather weak. On June 8—that is, two days later—he had another marked chill, and when I saw him, an hour afterwards, the rectal temperature was  $103^{\circ}$ ; the pulse 96. I again made a careful examination, but with negative results, save that pressure over the epigastrium elicited pain. *The spleen was decidedly not enlarged.* I ordered the continuance of the light diet which had been neglected as soon as he felt better, and I purposely refrained from giving any medicines. On the day following the temperature was  $100^{\circ}$ , and in a couple of days the patient was restored to his usual health. He has been under my constant observation ever since then, and he has remained perfectly well.

There has been no recurrence of the chills nor any symptom pointing to paludism. . Comment is unnecessary.

There is an affection not observed, however, as far as I know, in early life that presents all the characters of intermittent fever, and is not due to malarial poisoning. I mention it here for two reasons: first, to show how conditions other than paludism may produce a train of symptoms which cannot be distinguished from those produced by the malarial poison; and, second, because I have good reasons for believing that the affection is not generally known. I have reference to the “*fièvre intermittente hépatique*,” first described by Charcot,\* and admitted by all the leading authorities on diseases of the liver. Two forms are described: one occurring in patients with latent malaria, and the entrance of a gall-stone in the common bile-duct calls forth chills; and the other occurring in patients entirely free from any malarial taint.

*Convulsions.*—In children it is not uncommon to have a malarial chill replaced by a convulsion, which may be repeated as many as three, four, six, and even eight times within a few hours. In one of my patients, a little boy nineteen months old, who had distinct chills, these were replaced, on one occasion, by eight convulsions in the course of a couple of hours.

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\* “*Leçons sur les Maladies du Foie et des Reins.*” Paris, 1877.



At one time the patient may have a chill or that which has already been described as taking the place of it; at another time it may have a distinct convulsion; or again, it may have a chill which in a short time passes into a general convulsive seizure. Still further, there may not be any chills at all, but only attacks of convulsions. It would extend this paper to an undue length if I were to discuss the various affections in childhood that may be attended with convulsions. But there is one disease in particular which renders its subjects extremely prone to this disturbance of the nervous system,—I mean rickets.

The close association between rickets and convulsions is generally well known; but that which is not so well known is that the milder forms are just as likely as the severer forms to render the little patient subject to eclampsia. What I understand by the milder form is when the disease manifests itself only by delayed or premature dentition, by some sweating about the head, a tendency to kick off the bed-covering, and prominence of the superficial veins of the forehead and temples. In addition to the foregoing, there may be constipation or diarrhœa alternating with constipation. The case that I presented at the New York Academy of Medicine, March 14, 1889,\* may have been said to have belonged to this class, for the nervous disturbances were severe in the extreme.

The baby had suffered for six weeks with attacks of laryngismus stridulus and severe eclamptic attacks. For days the convulsions recurred as often as six times a day, some of which were extremely protracted, one lasting over two hours. But the child made a complete recovery by the treatment being directed to the rickets. In addition, bromide of potassium was given. Quinine or arsenic was not administered. What makes these cases so difficult to differentiate from malaria is the circumstance that the spleen may be considerably swollen, as it was in the case just referred to.

*The febrile stage.*—The fever is the most constant and prominent act in the three-act drama of acute malaria. Lieber-

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\* *New York Medical Journal*, June 8, 1889.

meister\* says, "The febrile access is distinguished from the fever attending most other diseases by its violence, on the one hand, and its rapid evolution on the other." The fever attains its maximum rapidly, at which point it remains for some hours, but the descent of the temperature-curve is gradual. I have seen it reach as high as  $105^{\circ}$  and  $106^{\circ}$  in cases that were of a benign type. In fact, none of the cases that form the basis of this paper could be considered as belonging to the severe or pernicious form. Such sudden high elevation of temperature may be met with at the onset of a simple attack of indigestion or of pneumonia and sometimes of scarlatina. Dr. Cheadle has reported a couple of cases in which the febrile stage was attended with a rash not unlike that of scarlatina. But in making a differential diagnosis in such cases it must be remembered that the scarlatinal rash does not appear until twenty-four hours have elapsed after the onset of the fever. The fauces in these cases may be red, but the redness has not that peculiar punctiform appearance which is so common in scarlatina; and, moreover, the redness in the fauces is less generally diffused. Then again, the fever of malaria is followed by a period of apyrexia more or less complete.

In central pneumonia, where the physical signs do not develop for two or three days, we exclude malaria by the absence of intermittens in the fever. But as the spleen may be considerably swollen in this disease, as will be shown later on, we have often to wait a few days before we are enabled to make our diagnosis.

*Sweating stage.*—The sweating stage in children is usually imperfect both as to degree and duration. It may be so slight as to pass unnoticed by the child as well as by the mother. At times, however, it may be quite profuse. Occasionally the mother will say that the child gets feverish sweats, then "dries up into fever," and again sweats. It may go through two or three such phases during a single paroxysm.

*Swelling of the spleen.*—The spleen enlarges more rapidly and to a greater degree than in adults, owing to the elasticity

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\* Liebermeister, "Infectious Diseases." Part I. Translated by Dr. Hurd Davis, 1888.

of its capsule in early life. Its enlargement is more important as a diagnostic element on account of the uncertainty and imperfection of the cold and sweating stages. Moreover, it may be accidental only, if the physician gets an opportunity to substantiate with the thermometer the mother's statement that the child has attacks of fever. It is also more important from the circumstance that in early life, no matter how small the dose of poison, it is always sufficient to produce marked congestion and consequent enlargement of the spleen. It is true that at first the organ decreases in volume when the paroxysm is over almost as rapidly as it increases, but after the second or third paroxysm it remains permanently swollen. Hence it may be that, if the child is examined in the intervals of the first two or three paroxysms, no increase of size will be noticed. It is then only in such exigencies as these that a diagnosis of malaria in childhood is justifiable in absence of splenic enlargement. The expression of this seemingly well-known fact might appear superfluous were it not that there is a tendency of late, in high quarters, to cast this sign into the background (Holt, Forchheimer). But the enlarged organ has to be sought for by percussion, and not by palpation, as in adult life, for it may reach considerable dimensions without it projecting beyond the margin of the ribs. The splenic tumor pushes its way upward and backward, because it is usually prevented from descending towards the pelvic cavity by the costo-colic ligament, which, in early life, is very rigid.\* I have time and again found the splenic dulness measure, vertically, four inches and more, and yet its lower margin did not reach beyond the eleventh rib. Even when the swollen spleen descends below the margin of the ribs it cannot always be felt as in the adult, owing to the soft consistency of the organ, which has aptly been compared to a sponge, the interstices of which are filled with blood.

To map out an enlarged spleen in a child requires some patience and a considerable degree of practice. I make this statement advisedly, for I have frequently seen skilful phy-

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\* Dr. George McClellan, Keating's "Cyclopædia of the Diseases of Children," vol. i. p. 37.



sicians accustomed to the examining of children make the greatest blunders when they came to examine the spleen. This fact must be my excuse for treating at some length this apparently simple matter. The child, perfectly nude or dressed only in its chemise, should be placed on its mother's lap, or, what is better still, on a table or hard level surface, on which a blanket is laid. It should be placed almost on its right side,—that is, in a position midway between the supine and side, with its left arm—held by the mother or an assistant—over its head. It should be seen to that the child does not arch its back, for in that position the spleen is displaced from the side of the chest. The percussion should be begun high up near the axilla and continued downward in a space bounded by the two axillary lines. As soon as a point is reached at which the note becomes dull, or a greater resistance is offered to the finger, a mark should be made with a pencil. This may be taken as the upper border of the spleen. The percussion should be continued lightly until the tympanitic note of the intestines is elicited. In percussing it is very important that not too much force be used in striking the interposing finger, for if this be done the tympanitic note of the stomach and intestines will be brought out through the overlying spleen. The careful physician need not be told that when abnormal dulness in the region just outlined is obtained, the posterior aspect of the chest should always be examined for pulmonary consolidation, or for what is more likely to give a dull note in that area,—pleuritic effusion. I recall an instance when, in the hurry of dispensary practice, after placing the child in the above position, and obtaining a dull note from the fifth rib downward, the diagnosis of an enlarged spleen was about to be made. The diagnosis of malaria would certainly have been entered on the books, for the symptoms pointed to this affection, did not the axiom, which one soon learns for himself in treating children,—“always examine the chest, no matter what the symptoms may be,”—prick my conscience and urge me to follow my usual routine of examining the chest. I found that the dull note, which I took to be the evidence of an enlarged spleen, was caused by a fairly copious purulent effusion into the pleural sac.

There is another error which one may readily fall into, if he does not bear in mind the fact that the lower border of the spleen is in close contact with the left flexure of the colon (Luschka). Hence an accumulation of fæces would give an increase of dulness in the splenic area. I always suspect this when the apparently enlarged spleen does not reach above the upper border of the ninth rib.

But, unfortunately, enlargement of the spleen is not a pathognomonic sign of malaria. It fell to the lot of that able and acute clinician, Friedreich,\* to point out that all acute infectious diseases are attended with marked swelling of the spleen. But of these only two,—typhoid fever and acute infectious pneumonia,—from this circumstance, are likely to cause the diagnostician any difficulty. According to this observer, even the milder forms of typhoid are attended with marked enlargement of the spleen,—an observation which I can fully corroborate in the typhoid of the young. The splenic tumor, therefore, bears no ratio to the severity of the disease. On the contrary, it may reach larger dimensions in the mild than in the graver variety. The enlargement takes place early in the disease. It may already be considerable on the second or third day. Indeed, Friedreich† mentions a case in which he noted a large splenic tumor in the initial stage before the thermometer registered any elevation of temperature. The tumor persists after the subsidence of the fever, and it is only after convalescence has been fully established that the organ regains its natural size.

The acute infectious pneumonia of this author is distinguished from the ordinary croupous variety by the local process, which at first may be confined to a small portion of the lung, spreading gradually from day to day, until the whole lung is affected. The fever continues for ten, twelve, and fourteen days. The termination is not by crisis but by lysis, which may spread over several days. Already during the first few days the spleen is markedly swollen, but the splenic tumor differs from that of typhoid by its rapid disappearance on the cessation of the fever.

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\* Volkmann's *Klin. Vorträge*, No. 75.

† Ibid.

Before leaving this subject, let me draw your attention to a recent paper by Dr. Fichtner,\* in which he describes six cases of sudden onset of fever of three, four, and five days' duration that were attended at the outset with marked enlargement of the spleen. One of the cases occurred in a child three years old. An exclusion was made of typhoid fever, but nothing was said about intermittent fever. An examination of the blood was made in one case only. The result was negative. The author claims to have described a new disease, and this claim receives support from Professor Hoffmann, who, in an appended note to the article, states that he witnessed an epidemic outbreak of what he terms *Fichtner's disease* in several members of the same family. But before adding another disease to our already overburdened nosology, it would seem to me that Fichtner should have presented more data, and should have given good reasons for excluding malaria or other infectious diseases.

*Hæmatozoa in the blood.*—The writings of Laveran,† Marchiafava and Celli,‡ Osler,§ Councilman,|| Shattuck,¶ James,\*\* and others have made every one familiar with the micro-organisms that occur in the blood of patients suffering from malarial poisoning, and it is only necessary for me to treat of them from a diagnostic point of view. But first a few practical hints about the method of obtaining the requisite drop of blood from the finger-pad of a child. So as not to frighten the little one, it is advisable to keep him in ignorance as to what you are going to do, and pretend you are playing with him by tying a soft cord around the last phalanx, in order to produce the necessary congestion in the finger-pad. The pricking should be quickly and deftly done with a sharp-pointed needle, or with—what is better still—a sharp-pointed æsthesiometer,—a suggestion for which I am indebted to Dr.

\* *Deutsch. Archiv f. Klin. Med.*, Bd. xliv., Heft iv.

† "Traité des Fièvres Palustres," Paris, 1884.

‡ "Fortschritte der Medizin," Nos. 14 and 20, 1885.

§ *Brit. Med. Jour.*, March 12, 1887.

|| *Trans. American Physicians*, vol. i., 1886.

¶ *Boston Med. and Surgical Journal*, 1888, p. 450.

\*\* *Med. Record*, January 25, 1888.



James. Let me here, also, express my thanks to this gentleman for his courtesy in examining the blood of some of my cases, and for demonstrating to me the micro-organisms obtained in some of his cases in adult life.

The diagnostic importance of the hæmatozoa or plasmodium malarie is still a matter of doubt, although the weight of evidence is decidedly in favor of their being of pathognomonic value. In a recent note from my highly-esteemed friend and former teacher, Dr. Osler, it is stated "the evidence is accumulating to show the constancy of the forms and the extreme diagnostic value of Laveran's work."

Still, it must be remembered that micro-organisms resembling those occurring in malaria have been found by Rosenstein in the blood of typhoid-fever patients, by Dujardin-Beaumetz in healthy blood when the evaporation of the serum was for a time hindered, by Hoffmann in pernicious anæmia, and by Pfeiffer in scarlet fever, mumps, and vaccination. James\* examined the blood of seventy-six patients suffering from a variety of diseases other than malaria, but including those just mentioned. He states that, in a number of instances, he found micro-organisms which might be mistaken by an inexperienced observer for those met with in malaria, but that any one acquainted with the latter would at once recognize the difference in appearance, which, he says, is marked. So much seems certain that, in order to detect the true forms, one must possess considerable skill and acquaintance with that kind of work. It appears that the hæmatozoa are present only in cases of rather a severe type, or during the paroxysm in less grave forms. Osler has, however, found them in five cases of chronic malaria which did not appear to be very grave. They rapidly disappear on the administration of quinine. Even when present, they are not easily detected, as their number is scanty, and several slides may have to be examined before a single plasmodium is found. I searched for them in fifteen cases presenting unmistakable evidences of acute malarial poisoning. In not a single instance did I succeed in discovering any. A few of these cases were examined

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\* *Med. Record*, January 25, 1888.

by Dr. James, but also with negative results. They may, nevertheless, have been present, for it was seldom that a child would allow his finger to be pricked a second time. Hence, as a rule, one specimen only was examined. The likelihood of having to obtain several specimens before meeting with success is a great drawback to carrying out the examination in children.

*The therapeutic test.*—We are now in a position to discuss the value of quinine as a means of differential diagnosis. Every physician will recall cases in which, after exercising the greatest care and thoroughness in the examination and observation of his patient, he will still be in reasonable doubt as to the nature of the disease before him. In such cases—which are, after all, rare in the practice of the careful and scientific physician—the administration of quinine is justifiable as a means of settling the diagnosis. It has its undoubted value, when properly applied, after we have exhausted all other resources and are still in the dark. But, unfortunately, by the majority of physicians the steps of forming a diagnosis of malaria are taken in the opposite direction. Does the child suffer from chills, lassitude, malaise, headache, etc.,—symptoms common to malaria and a host of other affections,—quinine is indiscriminately given. If the symptoms do not readily yield,—and they do not sometimes, even when due to malarial poisoning, especially in the chronic form,—malaria is excluded, often unjustly. It is then, perhaps, that a thorough examination is made, or the physician goes on groping in the dark trying a variety of remedies in succession, among which anthelmintics figure prominently.

The diseases, in my experience, most likely to be mistaken for acute malaria are acute gastritis and typhoid fever. We have already seen how a mild attack of acute gastritis in a nervous youth may be attended with periodic chills. But in this disease the spleen is not found enlarged. If we adhere to the idea that malaria in childhood is always, with but very few exceptions, attended with swelling of the spleen, we cannot fall into the error of mistaking acute gastritis for malaria. As an illustration of this let me narrate, somewhat at length, the following case :

J. W., æt. three years, was brought to the clinic July 15, 1889, by his mother, who gave the following story: He had always been strong and healthy until four weeks before, when he began to suffer with fever and anorexia. During the first week of illness he had daily three febrile attacks: one in the forenoon, one late in the afternoon, and one at night, each of which was followed by sweating. After that the febrile attacks occurred only every other night. On the day following the febrile night the child would be peevish and out of sorts, but on the second day he would be quite lively and seem fairly well. For the first two weeks he was treated for malaria by a well-known pediatrician, and was given quinine in full doses regularly. But as the child, in spite of this, continued growing worse, the mother became discouraged and left off treatment. After the lapse of two weeks more, and as the child seemed to be getting no better, she decided to bring him to the clinic. At the time of the first visit it was noted, "The child, though fairly healthy looking in the face, shows marked emaciation of the trunk and limbs. The tongue has a peculiar appearance. Running along the centre and occupying about one-third of the width of the dorsal surface is an elevated ridge of a grayish-yellow fur; the remainder of the dorsum is smooth and unduly red. The bowels are constipated, and the abdomen is distended and gives a tympanitic note all over. *There is no enlargement of the spleen.* No fulness in the left iliac region. The inguinal glands are moderately enlarged. The rectal temperature 102.3°. The lungs and heart are normal. An examination of the blood with  $\frac{1}{2}$  oil immersion lens gives negative results." He was given four grains of calomel and soda every second night, and a mixture of rhubarb and soda t. i. d. Liquid diet was ordered. Two days later the following note was made: "Child very much improved; abdomen less tympanitic; tongue cleaning; rectal temperature 99°. July 22. 'Quite well in every respect. He has had no fever since he began treatment.' The inguinal glands still seem larger than normal." He continued in attendance regularly every two days, so as to be kept under observation, until August 26. He had remained perfectly well and had gained flesh. The glands in the groin could then scarcely



be felt. The temperature was taken at each visit, and was never found to be above 99° in the rectum.

The case was instructive to me in several ways. The emaciation had been so great and the illness apparently so grave—although the little fellow walked about—that at first I suspected tuberculosis of some structure, probably of the peritoneum. I at once excluded malaria from the circumstance that the spleen was of normal size. Typhoid fever was excluded for the same reason. Besides, typhoid fever of four weeks' duration, even if mild, is attended with more physical prostration. Dr. A. Seibert,\* in a suggestive article on grave acute gastritis in early childhood, gives the histories of three cases, one of which resembled typhoid fever and another intermittent fever; but the author justly excluded the latter in absence of splenic enlargement. By the majority of physicians vomiting is looked upon as a prominent symptom of gastritis in early life, and as this symptom, in fact, is more often absent than present, the affection is frequently overlooked. Instead of gastritis the diagnosis of "remittent fever," "malaria," and "bilious fever" is not uncommonly made.

In the differential diagnosis of typhoid we receive no assistance from the condition of the spleen, inasmuch as the organ swells considerably in that disease, as has been already fully dwelt upon. Pronounced cases, of course, offer no difficulties, but, in my experience, these are the exception. One meets with cases of "walking typhoid" just as frequently among children as among adults. Scarcely a week passes that I do not see one or two such cases at the Vanderbilt Clinic. Some authors lay great stress on the negative value of herpes labialis as a diagnostic symptom. Liebermeister† and others would exclude typhoid fever in the presence of herpes of the lips or of the nose. On the other hand, herpes of these parts are rather common in acute malaria. Prodromata, although not as frequent an occurrence in the typhoid of children as in that of a more advanced life, do sometimes occur. Of these epistaxis and headache possess the most diagnostic value. In typhoid the temperature-curve will be different. It will show

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\* *Jahrbuch für Kinderheilkunde*, 1887.

† Loc. cit.

that the exacerbations always occur in the evening, while in malaria they may occur in the forenoon. Further, in typhoid the elevation of temperature is constant; in malaria, excepting in the remittent type, which is seen only in very malarious regions, the febrile attacks are separated by intervals of apyrexia of at least several hours' duration. The appearance of a roseola rash in typhoid is of pathognomonic value. But for this we have to wait twelve days after the onset of the fever, although Jürgensen\* states that in the mild cases of typhoid in adults the rash occurs as early as on the fifth day. It is, however, a more constant sign in the typhoid of early life than in that of advanced life. In children the rash is more likely to make its appearance first on the lower part of the back than on the lower part of the front of the chest and abdomen, as in adults. In the majority of cases of typhoid in children the tongue will show the characteristic appearance, the dorsum being coated heavily with a grayish-white fur, while the edges and tip are of a bright red color. Lastly, if we are still in doubt, an examination of the blood should be made. Of course, it is in doubtful cases like these that quinine finds some value as a diagnostic test.

As an illustration of the difficulties sometimes encountered in forming a diagnosis allow me to relate briefly the following case:

M. A., a little girl, twelve years old, came alone to the clinic on August 7, and stated that her health began to fail about two months before, and that for the last six weeks she had had a daily chill followed by fever, but not by sweating. That was all I could ascertain from her. I found her quite anæmic, with a dark yellowish discoloration of the skin. The tongue was coated with a heavy white fur, and the tip and edges were red. She said that her appetite was *nil*, and that for some days she had vomited everything she took, and that her bowels were rather loose. A careful examination revealed dry rhonchi all over the chest and considerable enlargement of the spleen (four inches vertically). Rectal temperature 102°; pulse 120, soft and small. She was told to go to bed and was ordered a milk diet and a mixture of bismuth and

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\* Volkmann's *Klin. Vorträge*, No. 61.

hydrocyanic acid. August 9 she called again. Vomiting had ceased, the tongue was cleaning, and the bowels were not so loose. She had no chills; the size of the spleen was the same; the temperature was  $103^{\circ}$ . She was told to continue with the same dietetic regimen, and was given pill quinine five grains t. i. d. August 12: No change; splenic enlargement persists; temperature  $102^{\circ}$ ; pulse 120; a few suspicious spots on the lower part of the chest. She was now given antipyrin as an antipyretic, and was ordered resorcin five grains t. i. d. She was instructed to remain at home and go to bed. My assistant, Dr. Schelpert, kindly undertook to watch the case for me. The temperature ranged from  $101^{\circ}$  to  $103^{\circ}$  until the 19th, when it fell to the normal. She called at the clinic on the 23d, and seemed quite convalescent. She made no complaint; the tongue was clean, appetite was good, and the temperature was normal. The spleen was of normal size. On the 26th she called again, saying that on that morning she had had a chill, and that she felt quite ill since then. I found the rectal temperature  $105^{\circ}$ , the pulse 120, and the spleen moderately enlarged. She was put upon the former treatment, and in seven days convalescence set in again,—permanently this time.

The case was undoubtedly one of typhoid, which probably had been running for three or four weeks before coming to the clinic. The chills, from which the patient stated that she had suffered daily, were doubtless the chilly sensations which patients frequently experience when they walk about with an elevated temperature. They ceased as soon as the patient was put to bed and before any quinine had been administered, which medicine had no effect whatever upon the course of the disease.

Any doubt that might have been entertained as to the nature of the illness was entirely dissipated when I made a visit to the house during her relapse, and found that the mother was suffering from unmistakable typhoid in the fourth week, from which she has since died.\*

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\* Since the above was written, three more members of the family have had typhoid fever.



*Chronic malaria.*—Under this heading I would describe the milder forms of paludal poisoning, which formed at least sixty per cent. of my cases. There may be chills and fever at the outset, which the mother has usually forgotten, unless she is questioned about them, or, what is more frequently the case, the affection is insidious from the beginning. The mother will tell you that the child has been ailing for some time, but she cannot say just when it began to show signs of ill health. I would make a distinction between this form and that of malarial cachexia,—a term to which I would apply the severer forms of protracted paludal poisoning, that met with in very malarious regions. I have had little experience with the latter, and will leave it out of consideration in this paper.

Chronic malaria manifests itself by a variety of symptoms, which may or may not show periodicity. Prominent among these are lassitude, drowsiness, a lack of energy, tiring on slight exertion, headache, dizziness, wandering pains in various parts of the body, chilly sensations, neuralgia of the intercostal nerves, restlessness at night, anorexia, vomiting, constipation, rarely diarrhoea, bloody diarrhoea, emaciation, a dirty brownish-yellow tint of the skin, anæmia, syncopal attacks, urticaria, night-sweats, asthmatic attacks, pain over the region of the spleen.

None of the enumerated symptoms, taken alone or conjointly, justify a diagnosis of malaria. They are met with in a number of other chronic diseases, but notably in chronic dyspepsia and what, for want of a better term, we will call debility, congenital or acquired. Here even more than in the acute form enlargement of the spleen is a *sine quâ non* in the diagnosis of malaria.

Some of the foregoing symptoms deserve special consideration.

*Headache.*—There is nothing characteristic about the pain in the head which would indicate its pathology. It was not a common symptom in my cases. On the other hand, I have met with this symptom much more frequently in chronic dyspepsia and in children who applied themselves too closely to their studies. I have never observed a case of brow ague,

which is so common a feature of chronic malaria in the adult. Eustace Smith\* says that it is never met with.

*Vertigo* is said to be a rare symptom in children, and when it does occur it is considered by many as almost pathognomonic of malaria. It was not present in any of my cases. Bohn only saw it once in four hundred and sixty-five cases. But it was a prominent symptom in two cases of *tænia lata* that came under my notice. I have not infrequently observed it follow slight concussion of the brain, caused by a fall, which the mother had forgotten until questioned about it.

*Bloody diarrhœa*.—I have met with it only once. It occurred every night; the child having from four to six stools, consisting mostly of blood. There was no looseness of the bowels during the day. At times this symptom does not exhibit any periodicity, and is distinguished from dysentery by the absence of pain and tenesmus, and by the absence of any considerable quantity of mucus in the stools. Further, in dysentery the spleen is not appreciably enlarged.

*Vomiting*, as an only symptom, was present in three of my cases, in two of which it occurred periodically, in one daily, and in the other every other day. On the same day that the child with the daily vomiting came under my care at the clinic another child was brought there to me with exactly the same symptom. In the latter case there was no enlargement of the spleen; but on questioning the mother, I learned that the child, some days before, on going down-stairs, had fallen a distance of three or four steps. The vomiting had begun since the fall, and was arrested in a few days by keeping the little one in bed and giving it daily three doses of fifteen grains each of bromide of potassium. Protracted vomiting in early life is not, in my experience, an uncommon symptom following an insignificant fall. In some cases it appears to take on a periodic type, as in the case alluded to.

*A peculiar color of the skin*.—Much diagnostic importance is attached to a pigmentation of the skin, showing itself in a peculiar "bistre" tint. It probably possesses great value in the severer forms of malarial cachexia, but it is not a charac-

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\* Loc. cit., p. 149.

teristic sign in chronic malaria. In none of my cases was it at all striking. In several of them the skin presented that dirty sallow appearance which is common to all affections attended with malnutrition, and in other cases the skin was of the normal hue.

*Attacks of syncope.*—I have not been able to find any mention of this symptom in the literature of malaria in early life that I have read. It occurred in two of my cases. In one it preceded the onset of the chills; in the other, a little girl four years of age had had no chills, but had fainting spells every day at 11 A.M. The mother stated that the child grew feverish after the syncopal attacks, and that she complained of feeling chilly at night. It would probably have been more proper to have described this symptom under acute malaria as one of the phenomena that may replace a chill in early life.

My friend, Dr. B. Sachs, tells me of a case that he had in private practice, in which a child, four months old, had for five or six successive days several fainting spells, or rather attacks of semi-collapse, in which the child apparently lost consciousness. The eyes rolled up and inward, the body became covered with a clammy perspiration, and the pulse was thread-like. The temperature, taken several times a day, showed moderate elevation ( $103^{\circ}$ ) at times, and at other times it was normal. The spleen was but moderately enlarged. The child was on the breast, and there was no evidence of gastric or intestinal disturbance. A diagnosis of malaria was made by exclusion. Quinine was administered, and the baby made a rapid and satisfactory recovery.

*Urticaria* is said by many to be a common symptom of chronic malaria in the child as well as in the adult. Bohn met with it only occasionally, and then mostly in the acute variety during the paroxysm. I have only twice seen chronic urticaria accompanied by enlargement of the spleen. But in children, chronic urticaria, not of malarial origin, is often cured by full doses of quinine. This circumstance doubtless accounts for the prevalent opinion that the affection is frequently caused by paludal poisoning. It forms a good illustration also of the likely errors in diagnosis that may be committed when much reliance is placed upon the therapeutic test.



*Night-sweats.*—This is another symptom the mention of which I have not been able to find in literature. It was present in two of my cases, one of which was quite instructive to me. The little girl, six and a half years of age, had always been delicate and had suffered from rickets in infancy, the evidence of which she showed in a pigeon-shaped breast. She had diphtheria eight months before and scarlet fever two months later. There was a loud systolic murmur at the apex, but no increase of cardiac dulness. The lungs were sound and the urine normal. No attention was paid to the spleen. The night-sweats were looked upon by me and by others as due to overheated rooms, to too much bed-covering, and to the delicacy of the child's health. Still, it was thought advisable to keep her under observation for future developments. Under improved hygienic surroundings, and a tonic treatment of several months, she grew considerably stronger and gained in flesh. But the night-sweats persisted, although they became less severe and less constant. About this time I began to make it a part of my routine at the clinic to carefully map out the limits of the spleen in every case. To my surprise, I found that her spleen was considerably enlarged (three inches vertically). She was now put upon a course of quinine and arsenic, and in the course of a few weeks the night-sweats entirely ceased. It is necessary to add that other chronic conditions which might give rise to a splenic tumor were excluded. The heart trouble could not possibly be credited with it, as circulatory disturbances were not present.

The chronic affections in childhood attended with marked enlargement of the spleen are leucocythæmia, lymphadenoma (Hodgkin's disease), and amyloid degenerations of the internal organs. In the differential diagnosis of these affections it must be borne in mind that leucocythæmia and amyloid degeneration may be the sequelæ of long-continued malarial poisoning. They each, however, possess characteristics of their own, and are easily recognized.

*Treatment.*—My paper has already reached such a length that I can only say a few words on this subject. I will make the confession at the outset that I have not found the cure of malaria—especially the chronic form, in early life—the easy

matter that some observers would lead us to suppose. Of course, quinine forms our sheet-anchor. I am in the habit of prescribing it in solution with aromatic sulphuric acid and syrup of lemon. This mixture is ordered to be given in sugar-water. Children seem, in most instances, to take it in this way readily. When it causes vomiting, I add aqua lauro-cerasi. I prefer giving the quinine in two or three large daily doses (five grains to a child five years old) until all acute symptoms subside. After this, a single large dose is given every third or fourth day for a couple of weeks. In the mean time, the remedy is given in smaller doses combined with liquor arsenici chloridi and acidum muriaticum dilutum three times a day for several weeks. In private practice I find that the tablets of chocolate of quinine, each containing one grain of the tannate, is a very pleasant form of administering the drug. I prefer those manufactured by Hazard, Hazard & Co., of New York, to the imported ones, as the chocolate is fresher, and is not so likely to disagree with the child's stomach. Bohn speaks very highly of the tannate salt in the treatment of children, but says it must be given in double the dose that the sulphate or muriate is given. Children at the breast might have the drug introduced into their system by administering it to the mother; but I have no data on this point. I have found that suppositories of quinine act very well where it is impossible to give the quinine by the mouth. I have never tried inunctions. Hypodermic injections should only be resorted to under the most urgent circumstances from their likelihood of being attended with abscess formations. Children are very prone to relapses; and to prevent these, I have had good results with pure nitric acid\* in doses of from two to five drops well sweetened and diluted. When the patient comes under treatment, unless he is suffering from actual diarrhoea, it is my custom to give a few purgative doses of calomel combined with soda. It has been a very common experience with me to find that, although all the symptoms had vanished under anti-periodic treatment, the enlargement of the spleen would persist. As it is a well-known fact that relapses are more liable

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\* This remedy is recommended by Dr. S. M. Bemiss.

to occur while the spleen remains enlarged, and that the chronic congestion may lead to permanent changes of structure, it behooves us to use every available means to bring the organ back to its normal size. Professor Jacobi, in his clinical lectures, recommends for this the administration of ergot. The drug has proved very efficacious in my hands. I gave usually the fluid extract in doses of ten to fifteen minims to a child five years old. It seemed to me that the ergot had no effect upon the malarial poison itself. A few cases of tumor of the spleen resisted even this treatment, and then I resorted to inunctions of ammoniated mercurial ointment over the region of the tumor, and gave strychnine internally. If it is thought advisable to give salines, it will be well to bear in mind an old observation of Glax and Kirch, and which has recently been substantiated by Pollatschek.\* These observers noticed that patients undergoing a course of treatment at Carlsbad were prone to have a return of intermittent fever if they had ever suffered from it before.

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#### DISCUSSION.

DR. HOLT.—There is one point in regard to the presence in malarial cases of splenic enlargement sufficiently great as to be positively diagnosed of which I wish to speak. It seems to me that there are a large number of cases in children with a history of exposure to malarial poison, with pretty clear symptoms indicating such affection, and curable by quinine, but in which there is not sufficient enlargement of the spleen to be made out by ordinary methods of examination. I have lately made the test of enlargement in infants a sufficient degree of swelling to be made out by palpation. Percussion is often deceptive. The distention of the colon may render it difficult or impossible to be certain about the splenic outline. It seems to me that in the vast majority of cases where the organ is considerably enlarged it can be felt, and that where it is slight we cannot be certain about it. Furthermore, that there is quite a large class of cases of malaria in which demonstrable enlargement is wanting.

DR. FRUITNIGHT.—The presence of enlargement of the spleen would aid in the diagnosis, but it is hard to be assured in children that the spleen is enlarged. Enlargement of the spleen with the periodicity and other symptoms would be corroborative, but we could not depend upon enlargement of the spleen alone for our diagnosis.

DR. JEFFRIES.—Within a week I treated a child who two days after its return from the country had a convulsion. I examined the blood and found the plasmodium. Quinine was then given and the child recovered. In this case the spleen was not found enlarged.

DR. HOLT.—I am sorry that the author has not distinguished between infants and children five or six years of age. In the case of infants many points come up in connection with the diagnosis which are not met with in older children. In the latter the disease runs about the same course as in adults. In young children the diagnosis is often difficult. The one disease with which malaria is most frequently confounded is pneumonia. In some cases it is impossible to say for two or three days whether the child is suffering from pneumonia or malaria. I have now a child under observation who, for the first four days of its illness, showed, upon the most careful

and repeated examinations, no physical signs of pneumonia. The temperature would run up to 104° F. in the afternoon and drop nearly to normal in the morning. At the end of four days a small area of consolidation was discovered high in the axilla and at the apex in front.

If we accept the plasmodium as the test of malaria, and the only test, we must admit that the vast majority of cases which we see in New York are not cases of true malaria. Two years ago the blood from quite a number of patients was examined by Dr. W. B. James and myself, and we were not able to demonstrate the plasmodium in a single case in which the disease had been contracted in New York City. The teaching of Dr. Janeway has long been that a case exhibiting well-marked paroxysms was seldom seen in New York City unless the patient had contracted the disease elsewhere.

DR. CARR.—Looking over the record of four hundred and sixty-four cases seen at St. Mary's Free Hospital for Children, I found only one in which the diagnosis of malaria was made by enlargement of the spleen. In one hundred and forty-two of these cases there were marked signs of gastro-intestinal or intestinal disturbance. In listening to the paper, it seemed to me that many of the symptoms mentioned as being common in chronic malarial troubles were just as common in obstructive gastro-intestinal catarrhs. Those cases with coated tongue, pallor, or peculiar yellowness, emaciation, irregular sweats, and fever are relieved as frequently by mercurials as by quinine. I must say that, in my experience, a mercurial has given the better result. I have not examined for enlargement of the spleen so often as Dr. Vineberg, and doubt whether I could determine the enlargement so exactly.

DR. SEIBERT.—For a number of years I have found in every case of malaria a symptom which I believe to be peculiar to that disease,—namely, a greenish coating of the tongue. In severe cases this green is of a very dark shade. In milder cases the shade is lighter. In every case where I see this greenish discoloration, I invariably find enlargement of the spleen. I have found this greenish coating a very valuable symptom, especially in the chronic forms of the disease.

DR. HUBER.—I wish simply to call attention to a remedy that has not been mentioned, and that is, the use of ergot, particularly in cases where the spleen is enlarged. In cases where the diminution of the size of the spleen under quinine has been slow, the use of the fluid extract of ergot has been followed by rapid diminution.

DR. FRUITNIGHT.—There is one point in the diagnosis of this affection to which I would refer, and that is the imperfect

ratio between the fever and the nervous disturbance accompanying the fever; for instance, we may see a child with a temperature of 105° F., and yet there may be no marked cerebral disturbance. The child does not appear to be so ill as the high temperature would warrant. This is an important point in diagnosis.

I have found that pneumonia and typhoid fever are frequently mistaken for this disease. Scarlet fever also is often diagnosticated when malarial disease alone is present. This is due to the fact that a bright, general erythema, caused by the high temperature, is often present. This erythema is not persistent, and soon disappears when the temperature has been reduced.

THE PRESIDENT.—In considering this subject we must distinguish, as Dr. Holt has said, between the infants and older children. The older children have the intermittent fever of adults, and it can be easily diagnosticated. In the infant the diagnosis is difficult. In many cases I am not sure that we can diagnosticate malarial fever as well as Dr. Vineberg appears to do. I frequently miss the enlarged spleen. I have seen on the post-mortem table enlarged spleens, which I could not make out during life. I have been often compelled to make the diagnosis of malaria—which I make very seldom—mainly by exclusion.

As far as ergot goes, that is a practical point which may be of importance. I used it some thirty years ago in a case of malarial fever with enlarged spleen, which would not yield to arsenic, quinine, and the iodides. The ergot reduced the size of the spleen and broke up the fever when nothing else could. I have frequently used it either alone or in connection with quinine since I published my first observations, nearly thirty years ago, in the *American Medical Monthly*.

DR. KEATING.—There is probably no branch of the profession which meets with so much competition with homœopaths as we do, and this is seen particularly in the methods of administration of drugs in such diseases as malaria. Undoubtedly sufficient attention has not been paid to methods of dosing and palatability of medicines used for young children. Recent papers, and particularly those of the President of this society, have been of great value in this direction. We are accustomed to give large doses of quinine without paying much attention to the method of administration. This is an important point for consideration. What is the experience of members with the more insoluble and tasteless preparations, such as the tannate? Are they of service? If not, what is the best way of prescribing quinine?



DR. VINEBERG.—The point which I wished particularly to bring out was that enlargement of the spleen is not easily made out in children if palpation is relied upon. I have often found that a spleen which gave a dulness of four inches did not project beyond the border of the ninth or tenth rib. There is an anatomical point which accounts for the fact that the spleen rarely projects below the ribs in children. The costo-colic ligament, on which the spleen rests, is very rigid in early life. Any one who relied upon palpation would overlook ninety per cent. of the cases of enlarged spleen. Very light percussion should be employed to determine the area of splenic dulness. If force is used, you will get the tympanitic note of the stomach or intestine.

Regarding the evidences of malaria in very young children, I omitted that part of my paper in reading it. Under two years of age chills are said never to occur. Instead of these there will be a little blueness of the skin or the finger-nails will become blue.

The administration of quinine, in private practice, I find to be best carried out by giving the tannate in the form of a lozenge with chocolate. Each tablet contains one grain, and they are readily taken.

In regard to the color of the coating of the tongue. This is a matter which depends largely upon the examiner. I have never been able to detect any peculiarity of the coating of the tongue in cases of malaria.

DR. HUBER.—I have given quinine in the manner recommended by the President,—that is, mixing the dose of quinine with simple syrup at the time of administration. Given in this way the dose is not as disagreeable as if the mixture had been made some time. The quinine can also be given in simple elixir or in the compound elixir of taraxacum.

DR. FRUITNIGHT.—I usually follow one of three methods in giving quinine according to the age of the patient and the tolerance of digestive organs. In very young children I, as a rule, employ the oleate rubbed into the surface of the body. In older children I suspend the drug in syrup of wild cherry. Where this is vomited, I give it in suppositories. To those children who can swallow them I give the small gelatin-coated pills.

DR. CAILLÉ.—It must be remembered that it is impossible to hide the taste of quinine when given in solution. The tablets of tannate of quinine contain very little of the specific drug, and I think a sufficient dose cannot conveniently be given in this way. Personally, I get along very well by giving the quinine suspended in compound elixir of taraxacum. Three to five grains can be given in a teaspoonful of the elixir.

Quinine can also be administered by inunction with oleate of quinine. Personally I have had no experience with this method.

DR. HOLT.—It seems to me that all methods of administering quinine in solution are bad. The only difference is in the degree of badness. I have tried various modes of suspending the drug, but with the same result in all. I have used the oleate of quinine by inunction without much success. I have also used the oleate by the rectum, but I think that it is absolutely useless. In cases in which the drug in suspension or in solution is vomited, or will not be taken, I rely on chocolate tablets. These can be used when nothing else will be taken.

DR. WATSON.—I use quinine by two methods. In the first the drug is triturated with an equal quantity of sugar of milk and dispensed in powders, and the mother is directed to mix each dose with a teaspoonful of the syrup of chocolate at the time that it is given.

I have at the dispensary a mixture containing quinine sulphate, one grain; sugar of milk, one grain; powdered liquorice-root, one-eighth grain. This, after trituration, is dispensed in powders, and the mother is directed to mix the required number of powders in molasses, chocolate, or coffee at the time of administration. The second method is for the mother to hold the child's mouth open and drop a one-, two-, or three-grain quinine pill into the throat. This is swallowed readily, and answers every purpose. It is my custom to give all the quinine required for the day during the first three or four hours of the morning.

DR. LATIMER.—After considerable experience in the administration of quinine, I have come to the conclusion that the best general vehicle is the fluid extract of liquorice. I am also convinced that quinine can be satisfactorily employed by inunction. The best preparation is a solution in oleic acid diluted with vaseline or lanolin. We have heard nothing of the old-fashioned method of giving unpleasant drugs in scraped apple or similar vehicle. This answers very well for older children.

Another method which applies equally to all obnoxious drugs is to have the child instructed in the swallowing of pellets beforehand. I instruct the mothers to practise the children in the swallowing of pellets of sponge cake, sugar pills, and the like. When they learn to do this, pills or capsules can be readily taken.

DR. CARR.—The yerba santa preparations of the National Formulary, an aromatic elixir and an aromatic syrup, are more palatable than the taraxacum. In hospital practice the fluid

extract of liquorice answers very well, although not so good a vehicle as the yerba santa.

THE PRESIDENT.—The tablets to which reference has been made contain, I think, not the tannate but the sulphate of quinine. The effect is therefore an active one. One grain of the sulphate is equivalent to two and a half grains of the neutral tannate. Four or five grains of quinine can be readily taken mixed with chocolate. Coffee is also useful. Ten grains can be easily taken in two tablespoonfuls of black coffee. Syrup of coffee can also be employed with advantage. The quinine and the vehicle should not be mixed until the time of administration. Although it requires seven hundred and eighty parts of water to dissolve one part of quinine, yet a small quantity of quinine will make the mixture as bitter as a larger quantity.

The method by inunction was recommended some twenty-eight years ago. The objection to that is that you cannot determine the dose. The oleates also irritate the skin in a short time.

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## A CONTRIBUTION TO THE STUDY OF THE SUMMER DIARRHŒAS OF INFANCY.

BY JOHN A. JEFFRIES, M.D.,

Boston.

(Continued from December Number.)

MANY of the forms below described as distinct species give cultures just alike on one or more media, and vary from time to time on different lots of the same medium. For instance, the shape of the head was found to vary in the gelatin cultures, not only with the dryness of the surface, but also with the glistening coat so often seen there. Were this coat absent, a flat circular head would be formed on moist gelatin, an elevated one on dry; given the coat, the bacteria would often grow along the spaces between the flakes, and thus produce the so-called mesentery head. The development of the shaft was found much more constant in form, but the characters of potato cultures gave better results than any other medium tried.



Besides the ordinary methods of culture, certain others were used. These were milk colored purple with a solution of litmus, to note the change of reaction alkaline or acid; potato cultures in test-tubes grown without oxygen according to the pyrogallic method of Buchner; small disks of white of egg in distilled water; and gelatin, gelatin plus 1.5 per cent. milk-sugar, and gelatin plus 1.5 per cent. beet-sugar, over mercury.

All cultures were made at the temperature of the laboratory,—from 60° to 70° F.

The lenses used were from Hartnack, all fine work being done with an eighteenth homogeneous immersion and a complete set of eye-pieces.

#### BACILLUS A.

*Form.*—On gelatin and potato, varying from very short bacteria, almost micrococci, to short yet distinct bacteria with a tendency to the diplo form. Size .6 x 1 to .7 x 1.25  $\mu$ .

*Motion.*—None observed.

Stains easily with any of the aniline dyes.

*Plate cultures.*—Forms small white or yellow-white, limited spots, at times bead-like in form, at times flat.

*Gelatin.*—Not dissolving; color white; head irregular, variable, rather thick, covering from half to three-quarters of the surface in old cultures; shaft not very strong, uniform or beaded, extending to full depth of inoculation with no special tendency to form a terminal bulb.

*Agar-agar.*—White, soft, rather thick, glistening growth, limited by line of inoculation and line of contact with the condensation water. Heavy white sediment at the bottom of the latter.

*Potato.*—Thick, viscid, shining, light, *café-au-lait*-colored growth, slowly spreading over potato. Condensation water clear.

*Potato without oxygen.*—Only a poor white growth at the end of seven days.

*Milk.*—No visible change at the end of fifteen days.

*Milk and litmus.*—Third day, blue changed to red color; ninth day, surface still red; rest with only faintest trace of pink; no curds.

*Gelatin and milk-sugar over mercury.*—Growth good; much gas evolved.

*Gelatin and beet-sugar over mercury.*—Growth good; but a moderate amount of gas evolved.

*Gelatin.*—Growth good.

*White of egg.*—Water clear at end of three weeks.

Bacillus A found in four cases of summer complaint and in one case of diarrhoea in adult. Large numbers introduced by syringe had no effect on a guinea-pig.

#### YEAST B.

*Form.*—A yeast-plant. The single cells spherical from 1.5 to 3  $\mu$  in diameter. In budding the bud is connected with the mother cell by a fine, short stalk.

*Motion.*—None observed.

Stains well with aniline dyes and hæmatoxylin.

*Plates.*—Appears on the surface as snow-white beads.

*Gelatin.*—Pure white; head rather thick, fairly extensive; shaft not strong; beaded. After a few days the gelatin dissolves from above down, giving finally a white, dry, sandy-looking coat on surface, a clear fluid, and a white sediment.

*Agar-agar.*—A white, thick growth, looking like a streak of tallow, limited to the line of inoculation, and a thin, paper-like coat on surface of condensation water.

*Potato.*—Whitish, dry, thick growth spreading over potato; condensation water clear.

*Potato without oxygen.*—Same, but poorly developed.

*Milk.*—Nothing to be noted at end of fifteen days.

*Milk and litmus.*—Blue color slowly fades.

*Milk-sugar.*—No growth at end of two weeks.

*Beet-sugar.*—No growth at end of two weeks.

*White of egg.*—Water clear at end of three weeks.

This plant was found but once,—in a case of chronic diarrhoea in an adult, but then in large numbers.

#### BACILLUS C.

*Form.*—Bacillus very small and slim, .3 to .4  $\mu$  broad, 1 to 1.50  $\mu$  long; ends not square. No tendency to form threads noted. Many are almost micrococci.

*Motion*.—Shoots actively about in all directions, but does not travel much.

Stains slowly and lightly.

*Plates*.—Colonies rapidly dissolving the gelatin and forming small pools, the size of a cent or larger, extending to the glass below; fluid clear, at times signs of green fluorescence.

*Gelatin*.—Strongly green fluorescing; dissolving. Dissolves rapidly from upper part of shaft and surface, thus at first forming an irregular shallow funnel; later the funnel spreads, and gelatin is dissolved from above down in a horizontal plane. Fluid clear with flocculi; no coat; abundant white sediment. The lower part of the shaft develops slowly as a white line, to be seen in the solid gelatin in the lower part of the tube. Ultimately all the gelatin dissolves, and the fluorescence disappears, leaving the dissolved gelatin watery, of a clear urine color.

*Agar-agar*.—Grows as a thin white band along line of inoculation. Agar-agar green fluorescent. Condensation water cloudy, with white sediment.

*Potato*.—Growth strong, of a clear brown or reddish horn color; viscid; looks sticky; does not flow; covers whole of potato. Condensation water clear.

*Potato without oxygen*.—Growth same in nature, but much slower and lighter colored.

*Milk*.—Third day no change; from the fourth day on slowly curdling; curd solid in one mass.

*Milk and litmus*.—Third day red; by the ninth day white; curd as above.

*Milk-sugar*.—Third day good growth; fair amount of gas-bubbles in gelatin; first signs of dissolving.

*Beet-sugar*.—Growth good; gelatin dissolved; by the sixth day a zone of gas one-fourth inch thick between gelatin and mercury.

*Gelatin*.—Undoubted growth, but very slowly; no gas formed.

*White of egg*.—A white cloud begins to form on about the sixth day in the lower part of the fluid.

This form was found but once in a case of chronic diarrhoea of an adult. Large numbers had no effect on a guinea-pig.



## BACILLUS D.

*Form.*—Very small, short bacteria,  $.5\ \mu$  broad and  $1\ \mu$  long, ends rounded.

*Motion.*—None noted.

Stains easily and well.

*Plates.*—Colonies appear as small white beads or flat round patches.

*Gelatin.*—Color dull white; head thin, wrinkled like the growth of *bacillus acidum butyricum* on agar-agar; shaft strong, leafed, and beaded, often with a terminal bulb. Bubbles may appear in the gelatin.

*Agar-agar.*—Grows as a narrow, thin, white, smooth, dry band along line of inoculation.

*Potato.*—Growth profuse, thick, slowly spreading, resembling partly-dried pea puré in color and appearance.

*Potato without oxygen.*—Growth fair in quantity, of a yellowish-white color.

*Milk.*—No visible change by the fifteenth day.

*Milk and litmus.*—Milk quickly turns red, and then slowly bleaches.

*Milk-sugar.*—Growth strong; gelatin torn up by the gas; by the third day an inch of gas above mercury.

*Beet-sugar.*—The same.

*Gelatin.*—Growth good; no gas noted.

*White of egg.*—No change at the end of three weeks.

Only found in one case of diarrhoea in an adult.

## BACILLUS E.

*Form.*—Short bacilli mostly in twos, ends rounded; single bacilli often oval.  $.5 \times 1$  to  $.7 \times 2\ \mu$ . Many micrococcus-like.

*Motion.*—None noted.

Stains readily.

*Plates.*—Colonies appear as small, white, soft, elevated spots, beginning to dissolve from the fifth to seventh day.

*Gelatin.*—Slowly dissolving in the form of a narrow, deep funnel. Heavy, dead-white coat on the surface; fluid thick, viscid; a whitish sediment at the bottom.

*Agar-agar.*—A profuse, solid, white, transparent growth; sediment in condensation water.

*Potato*.—A thick pus-colored growth, moist and glistening except at the upper part; this with a wrinkled frill. Condensation water cloudy. Later the growth becomes whitish and almost fills up the lower part of the test-tube.

*Potato without oxygen*.—Growth same as above.

*Milk*.—No visible change produced in fifteen days.

*Milk and litmus*.—The blue color slowly fades from the second day on; does not change to red.

*Milk-sugar*.—Growth good; no gas; no signs of dissolving. On seventh day mercury allowed to escape; in three days gelatin dissolved.

*Beet-sugar*.—Same as in milk-sugar.

*Gelatin*.—No more growth than might be attributed to the oxygen in the gelatin; on being exposed to the air the culture flourished.

*White of egg*.—Still clear at the end of three weeks.

This bacillus was only found in one case of diarrhoea in an adult, but formed a feature of the plates in this case.

#### BACILLUS F.

*Form*.—Bacteria .5 to .6  $\mu$  wide and of varying length, some of the single individuals being .75  $\mu$  long, others up to 10  $\mu$ . Longer threads occur, but they are divided into segments. The species is one of those forms which tend to grow into long threads and then divide.

*Motion*.—None noted.

Stains deeply and quickly. The very short ones stain only at the ends.

*Plates*.—The colonies appear as small brownish-white points, soon dissolving the gelatin. The cups thus formed spread slowly.

*Gelatin*.—Dissolving from surface and shaft in the form of a steep funnel; in older cultures the funnel shape is lost; sediment brownish.

*Agar-agar*.—Diffuse, thin, light-brown coat heavily heaped on surface of condensation water.

*Potato*.—Covers the whole surface with a rather dry, deeply-folded, chocolate-colored growth. In six or eight weeks the whole potato seems to be transformed into the growth.

*Potato without oxygen.*—Growth slower and with much less brown color.

*Milk.*—Curds formed at about the fifteenth day.

*Milk and litmus.*—The cream remains blue to the end; the milk slowly bleaches; does not redden; curds formed late.

*Milk-sugar.*—Growth poor.

*Beet-sugar.*—By the sixth day good growth; slight traces of gas in the form of bubbles, dissolving.

*Gelatin.*—Slow growth, dissolving; no bubbles.

*White of egg.*—Clear at the end of three weeks.

This plant was also only found in one case of diarrhœa in an adult, where it formed about ten per cent. of the colonies.

#### BACILLUS G.

*Form.*—Distinctly polymorphic, varying from a micrococcus  $.5 \times .5 \mu$  to a bacillus  $.5 \times 2 \mu$ . The round forms tend to appear in fresh gelatin cultures, and the long forms on potatoes, but long and short are often mixed together.

*Motion.*—Good in the form of lively short excursions.

Stains well; no difference between the long and short individuals.

*Plates.*—Colonies appear as rather thick, white, roughly-circular blotches.

*Gelatin.*—White; head dry, limited, thick, at times forming a bead; shaft to bottom fair strength, irregular in contour.

*Agar-agar.*—Growth as a narrow, thin, smooth, dry band along line of inoculation; exactly like Bacillus B, except for a distinct trace of yellow.

*Potato.*—Growth abundant, diffuses, soft, fluid with trace of yellow color; condensation water thick, owing to the culture flowing down.

*Potato without oxygen.*—Growth of same nature as in air, but poor and white.

*Milk.*—No visible change at end of fifteen days.

*Milk and litmus.*—By the third day blue color changed to red, from which time on the color slowly fades.

*Milk-sugar.*—Growth strong; many bubbles in the gelatin, and a volume of gas above mercury.



*Beet-sugar*.—Growth the same, but gas evolved at least fifty per cent. faster.

*Gelatin*.—Growth good ; a little gas appeared on the sixth day.

*White of egg*.—No change in three weeks.

Found in ten of the twenty-two cases of summer diarrhœa, in a kitten with summer diarrhœa, and in two of the experiment cats. It had no effect when introduced by a syringe into guinea-pigs.

#### BACILLUS H.

*Form*.—In gelatin, small, stout bacteria  $.6 \times 1 \mu$ , mostly in pairs ; on potato,  $1.5$  to  $2 \mu$ , and a little slimmer ; in water with white of egg, stout and long up to  $3.5 \mu$ , but still many of the short forms.

*Motion*.—Swims about at a slow pace ; no sudden erratic darting observed.

Stains well.

*Plates*.—Colonies dissolving, forming round, steep-edged, clear cups. No fluorescence noted in two days.

*Gelatin*.—Dissolves from the surface and upper part of shaft, forming first a cup and then working down from above ; at times a sandy surface coat ; sediment abundant. About the third day a trace of green color appears, which slowly increases to a beautiful emerald color, and then turns to dull green.

*Agar-agar*.—Growth as a greenish-white, thin, dry layer, spreading but little ; surface with a metallic appearance (thin film). Condensation water covered with a yellowish-white coherent coat. The substance of the agar-agar with the same green-blue fluorescence produced by bacillus pyocyaneus.

*Potato*.—Growth at first thin, white, with the same metallic appearance seen on agar-agar cultures. Later the culture spreads all over the surface, and potato, culture and all, turning green, assumes the appearance of a mass of spinach.

*Potato without oxygen*.—Growth the same as in air, except less green color.

*Milk*.—Milk separated into a small curd and much clear yellow whey by the seventh day.

*Milk and litmus*.—Same as above, except the curd is blue.

*Milk-sugar*.—Faint increase in first two days.

*Beet-sugar*.—Steady progressive growth, gelatin dissolved, and a few small bubbles appearing.

*White of egg*.—Water slowly becomes cloudy from below up.

Found in fair numbers in one case of summer diarrhœa.

#### MICROCOCCUS I.

*Form*.—True micrococci under  $.5 \mu$  in diameter, with but slight differences between the individuals.

*Motion*.—None observed.

Stains well.

*Plates*.—Colonies appear as simple white spots.

*Gelatin*.—Growth white; head thin, finely sculptured, covering most of surface, later tending to heap up in the centre; shaft slight, tapering a little, hairy. The gelatin becomes soft and sticky, but does not dissolve.

*Agar-agar*.—Growth as a soft, white, glistening, semi-transparent band along line of inoculation.

*Potato*.—Growth slight, dirty yellow, dry, finely nodulated, spreading but little.

*Potato without oxygen*.—No growth.

*Milk*.—No visible change.

*Milk and litmus*.—No visible change in three weeks.

*Milk-sugar*.—No growth.

*Beet-sugar*.—No growth.

*White of egg*.—Clear at the end of three weeks.

Found in one case of summer diarrhœa and in a kitten with cholera infantum.

#### MICROCOCCUS OVALIS.—ESCHERICH.

*Form*.—Small-sized micrococci; also larger elliptical forms with transverse line of division. Micrococci  $.3 \mu$  in diameter; elliptical form  $.3 \times .5 \mu$ .

*Motion*.—None.

Stains well.

*Plates*.—Small white spheres in the gelatin.

*Gelatin*.—Growth white; head absent, or a mere trace; shaft very strong, extending undiminished to the bottom. In

cultures two or three months old the gelatin is liable to dissolve about the shaft and let it fall in a mass to the bottom.

*Agar-agar.*—Growth appears as a few thin, small, tallow-like spots, soon ceasing to increase in size.

*Potato.*—A few minute white points.

*Potato without oxygen.*—No growth could be seen.

*Milk.*—No visible change in fifteen days.

*Milk and litmus.*—Blue color, bleaching very rapidly from below up, with no trace of red; no other change observed.

*Milk-sugar.*—Growth same as in air, except for the formation of a thin head above the mercury; no gas developed.

*Beet-sugar.*—Just the same.

*Gelatin.*—Just the same.

*White of egg.*—Still clear at end of three weeks.

Found in but one case of summer diarrhoea.

STREPTOCOCCUS COLI BREVIS.—ESCHERICH.

*Form.*—Little micrococci, .5  $\mu$  or under in diameter; at times in short chains, then the individuals broader than long.

*Motion.*—None noted.

Stains well.

*Plates.*—Colonies dissolving, forming narrow, steep cups, with a heavy growth of a tawny color.

*Gelatin.*—Growth white; gelatin dissolving uniformly from the shaft as an axis, thus producing a cylinder of dissolved gelatin surrounded by a hollow cylinder of clear solid gelatin. Fluid cloudy, but little sediment until active growth has stopped.

*Agar-agar.*—Appears as a very thin, white, transparent growth.

*Potato.*—Nothing visible in eleven days.

*Potato without oxygen.*—Nothing visible in seven days.

*Milk.*—Voluminous curd and clear whey formed in three days; later the curd from above down develops a light rose color.

*Milk and litmus.*—Blue color rapidly fading; same phenomena as above developing.

*Milk-sugar.*—Growth as in air; no gas in five days.

*Beet-sugar.*—Growth as in air; a few bubbles in six days.



*Gelatin*.—Growth as in air.

*White of egg*.—Clear at the end of three weeks.

Found in six cases of summer diarrhœa and one case of diarrhœa in an adult. Had no effect on a guinea-pig.

#### BACILLUS J.

*Form*.—Polymorphic, varying from micrococci  $.6\ \mu$  to well-shaped bacilli  $.5 \times 1.5\ \mu$ . Bacilli occur chiefly in the old cultures.

*Motion*.—None observed.

*Stains*.—The micrococcus form stains deeper than the bacillus form.

*Plates*.—The colonies appear as small white beads or blotches, with nothing characteristic about them.

*Gelatin*.—Culture white; head limited, tending to form a bead; looks soft, yet glassy; shaft strong, often with a terminal knob. Bubbles are apt to appear in the gelatin of old cultures.

*Agar-agar*.—Culture forms a thin, white, transparent band.

*Potato*.—Culture spreading but little, thick, of a faint, brownish-yellow color; condensation water clear, with a heavy white sediment.

*Potato without oxygen*.—Growth same, but white.

*Milk*.—No visible change at the end of fifteen days.

*Milk and litmus*.—Blue changed to red on the second day; then slowly bleaches from below up.

*Milk-sugar*.—Growth good; gas formed by third day.

*Beet-sugar*.—Growth good; gas formed by third day.

*Gelatin*.—Growth good; no gas formed by fifth day.

*White of egg*.—Fluid still clear at end of third week.

Found in only one case of summer diarrhœa, then in numbers, some forty per cent.

#### BACILLUS K.

*Form*.—Short bacilli  $.5$  to  $.6\ \mu$  broad and 1 to  $2\ \mu$  long, mostly  $1.25\ \mu$  long; some a trifle larger in potato cultures.

*Motion*.—None observed.

Stains well.

*Plates*.—Colonies appear as white beads or irregularly circular blotches.

*Gelatin*.—Culture white; head of the mesentery type, or circular and leaf-like, thin, dry looking; shaft finely nodular, good to the bottom.

*Agar-agar*.—Culture thick, china white, looks soft, and has a tendency to spread over surface.

*Potato*.—Culture slowly spreading, no rapid growth; at first white, but with age acquiring a faint tawny color; surface inclined to rise in undulations; condensation water clear.

*Potato without oxygen*.—Growth of same nature, but white.

*Milk*.—No visible change in fifteen days.

*Milk and litmus*.—Blue changed to red in two days; then slowly bleaches from below up.

*Milk-sugar*.—Strong growth; but little gas.

*Beet-sugar*.—Strong growth; but little gas.

*Gelatin*.—Growth fair; gas not observed.

*White of egg*.—No change in three weeks.

Found in eleven cases of summer diarrhœa and one case of diarrhœa in adult, always in large numbers; once as a pure culture. Had no effect on a guinea-pig.

#### BACILLUS L.

*Form*.—Mostly diplo-bacilli; a few single ones,  $.4 \times 1.25 \mu$ .

*Motion*.—None observed.

Stains well.

*Plates*.—White, clear, rapidly-extending cups, often with a central mass.

*Gelatin*.—Culture white, rapidly dissolving from both surface and shaft, thus causing an irregular funnel. Upper part of fluid cloudy, rest clear, with snow-like flocculi; heavy white sediment.

*Agar-agar*.—Culture forms a soft-looking china-white tract along centre of surface.

*Potato*.—Whole of potato shortly covered with a thin, mottled, yellowish-white coat; condensation water thick, with a scum and bubbles on the surface.

*Potato without oxygen*.—Culture same, except no bubbles seen.

*Milk*.—Loose curds formed in the second week.

*Milk and litmus*.—Blue color fades out ; does not turn red.

*Milk-sugar*.—Growth strong, gelatin dissolving more slowly than in the air ; a few bubbles.

*Beet-sugar*.—Same.

*Gelatin*.—Growth occurs, but less than with the sugars.

*White of egg*.—No change in three weeks.

Found in three cases of summer diarrhoea, once the only form found, and in three kittens.

#### BACILLUS M.

*Form*.—Regular, slim, small bacilli,  $.3 \times 1 \mu$ .

*Motion*.—None observed.

Stains poorly.

*Plates*.—Colonies appear as rather large, irregular, white, elevated spots, surrounded by a green fluorescing halo.

*Gelatin*.—Culture white ; gelatin of fresh cultures grass-green fluorescing ; head extensive, flat, covered with little knobs ; at times forms curious geometrical figures ; shaft poor, but extending to bottom.

*Agar-agar*.—Culture white, fairly thick, sculptured, tending to spread ; substance of agar-agar, at first green fluorescing, then yellowish.

*Potato*.—Growth whitish-yellow, limited on the upper dry part, diffuse and abundant on the lower part.

*Potato without oxygen*.—Only poor growth.

*Milk*.—Begins to curd in a few days.

*Milk and litmus*.—Color slowly fades ; does not turn red.

*Milk-sugar*.—Growth fair ; no gas.

*Beet-sugar*.—Same.

*Gelatin*.—Merest trace of growth.

*White of egg*.—Water slowly becomes cloudy.

Found in one case of summer diarrhoea, in one case of diarrhoea in adult, in one experiment kitten, to which it had been fed, and in another experiment kitten. Had no effect on guinea-pig.

#### BACILLUS N.

*Form*.—Bacilli  $.5 \times 2$  to  $.5 \times 4 \mu$ , often in short chains, ends round ; individuals at times more or less curved.



*Motion*.—Active, fish-like.

Stains well.

*Plates*.—Colonies dissolving, forming broad, shallow surface pools, with a white surface coat.

*Gelatin*.—Culture white; dissolving the gelatin in the form of a broad, shallow cup, or saucer-like; then, from above down, the dissolved gelatin is unusually clear and covered on the surface with a coat not unlike a layer of coagulated albumen. In old cultures a slight sediment is formed. The shaft below the cup grows slightly, is shadow-like, and does not dissolve.

*Agar-agar*.—Forms a very thin, transparent coat over whole surface.

*Potato*.—In three days nearly the whole surface is covered with a thin, dry, yellow, wrinkled coat; surface of condensation water the same.

*Potato without oxygen*.—Culture the same, except yellow color less pronounced.

*Milk*.—No visible change occurred in fifteen days.

*Milk and litmus*.—The blue color began promptly to bleach throughout and was all gone in eight days.

*Milk-sugar*.—Growth slow, limited, but undoubted; the characters of an air culture developing on a much smaller scale.

*Beet-sugar*.—Two efforts failed.

*White of egg*.—Fluid soon becomes cloudy.

Found in one case of summer diarrhoea and one of diarrhoea in an adult.

#### BACILLUS O.

*Form*.—Short square-ended bacteria, .4 to .5  $\mu$  broad and 1 to 1.5 long, in chains of thirty or more, the clear spaces long up to .8  $\mu$ .

*Motion*.—Swim along with a resemblance to a snake; no corkscrew (spiral) motion could be made out.

Stains beautifully clear with any of the basic aniline dyes in water.

*Plates*.—Cultures dissolving, forming broad, shallow, rapidly-growing pools; fluid cloudy, often with a small ball of sediment in the centre.

*Gelatin*.—Gelatin rapidly dissolving from both surface and shaft in no definite or fairly constant form. Fluid clear with coarse white flocculi both top and bottom.

*Agar-agar*.—Culture forms a white, soft, running growth.

*Potato*.—For some time the culture forms an almost invisible white growth much resembling cultures of the typhoid-fever bacillus. Old cultures are more distinct; the condensation water clear, with at times a few bubbles.

*Potato without oxygen*.—Growth the same.

*Milk*.—Milk begins to curd on the third day; serum clear; the curd is in one mass and cheese-like.

*Milk and litmus*.—No change in three days, then slow bleaching; no red seen at any time.

*Milk-sugar*.—Growth less rapid than in air, but pronounced; gas bubbles to about fifteen cubic centimetres formed in seven days.

*Beet-sugar*.—Growth decidedly stronger; gas to about eight cubic centimetres formed in the first week.

*Gelatin*.—Growth same as with milk-sugar.

*White of egg*.—No change in three weeks.

Found in two cases of summer diarrhoea and in three of my experiment kittens, once as pure culture.

#### BACILLUS P.

*Form*.—Small bacilli  $.4 \times .1 \mu$  with a tendency to form micrococci  $.6 \times .5 \mu$  in old cultures, as a degeneration form.

*Motion*.—None observed.

Stains well; the micrococcus form deepest.

*Plates*.—Cultures appear mostly as small white spots, but some spread over surface.

*Gelatin*.—Growth abundant, white; head tends to be of the mesentery type; shaft strong to bottom.

*Agar-agar*.—Culture forms a thin, dry, smooth, white, enamel-like band along line of inoculation.

*Potato*.—Growth good, dry, diffuse; upper dryer parts dirty brownish, lower parts buffy.

*Potato without oxygen*.—Growth good; white, containing a few bubbles.

*Milk*.—No visible change in fifteen days.

*Milk and litmus*.—The blue color quickly begins to bleach and turns red at the same time.

*Milk-sugar*.—No growth ; controls in air grew well.

*Beet-sugar*.—Growth good ; about two cubic centimetres of gas formed in the first week.

*White of egg*.—No change in three weeks.

Found in two cases of summer diarrhoea.

#### MICROCOCCUS Q.

*Form*.—Only true micrococci .5 to .75  $\mu$  in diameter observed.

*Motion*.—None observed.

Stains well.

*Plates*.—Colonies form the white spots and beads so often mentioned, with nothing peculiar.

*Gelatin*.—Culture white ; head flat, good sized, dry, knobbed, and concentrically lined ; shaft strong, beaded, often surrounded with bubbles.

*Agar-agar*.—Culture forms a simple china-white line.

*Potato*.—Growth never abundant ; generally formed white beads ; at times these would run together to form a soft white mass.

*Potato without oxygen*.—Growth, if anything, better than in the air ; gas-bubbles in the culture.

*Milk*.—No true curds in fifteen days ; cream raised up by gas in three days ; old cultures seem to effervesce if shaken slightly.

*Milk and litmus*.—Blue changed to red in three days ; red then bleaches ; other characters same as in milk.

*Milk-sugar*.—Growth good ; gas formed at the rate of about five cubic centimetres a day.

*Beet-sugar*.—Growth good ; gas formed at the rate of eight or ten cubic centimetres a day, and mercury soon all expelled.

*Gelatin*.—Growth fair, but no gas formed in five days.

*White of egg*.—No change in three weeks.

Found in one case of summer diarrhoea as a pure culture in vast numbers.



## MICROCOCCLUS R.

*Form.*—Large micrococci; 1 to 1.3  $\mu$  in diameter.

*Motion.*—None observed.

Stains well, but viscous coat often confusing.

*Plates.*—Colonies form white, viscid patches, which will come up in one piece.

*Gelatin.*—Growth white; head broad and thick, viscid, edge scalloped, even; surface veined like a peltate-leaf; shaft a trace only.

*Agar-agar.*—Culture forms a soft china-white, viscid line.

*Potato.*—By the eleventh day a very meagre, almost invisible, white growth, which could not be surely recognized by the eye.

*Potato without oxygen.*—No growth.

*Milk.*—No visible change in fifteen days.

*Milk and litmus.*—No visible change in fifteen days.

*Milk-sugar.*—No growth.

*Beet-sugar.*—No growth.

*White of egg.*—No change in three weeks.

This plant was found in one case of summer diarrhœa and in the alimentary canal of one of my experiment cats. It has never been seen as a contamination nor found in the laboratory. In both cases it occurred in numbers. Had no effect on a guinea-pig.

## BACILLUS S.

*Form.*—On gelatin very short bacilli, .4 x .8 to 1  $\mu$ ; on potato longer up to 3  $\mu$ .

*Motion.*—None observed.

Stains well.

*Plates.*—Colonies tend to form white, irregular blotches.

*Gelatin.*—Culture dull white; head extensive, soft, thick; border irregular with many processes, at times even; shaft strong to bottom. Gelatin tends to split.

*Agar-agar.*—Culture forms a soft, thick, china-white coat, spreading over the whole surface.

*Potato.*—Growth abundant, diffuse, at first china white, soft; fluid, thick dirty white. In old cultures a buffy shade appears,

and the bottom of the test-tube appears as if filled with whitish pus.

*Potato without oxygen.*—Growth strong, literally blown up with bubbles, which vanish a few days after the admission of oxygen.

*Milk.*—No visible change in fifteen days.

*Milk and litmus.*—Blue changed to red ; red then bleaches.

*Milk-sugar.*—Growth and formation of gas both moderate.

*Beet-sugar.*—Growth good ; gas excessive.

*Gelatin.*—Growth fair ; no gas in five days.

*White of egg.*—No change in three weeks.

Found in four cases of summer diarrhoea. Had no effect on a guinea-pig.

#### SPIRILLIUM T.

*Form.*—Curved bacteria  $.5 \times 1.2 \mu$ , forming chains to six segments ; round-ended if separate ; nearly square-ended in the chains.

*Motion.*—Shoot about in an erratic, lively way.

Stains fairly well.

*Plates.*—Colonies form small, round, clear cups, with little sediment.

*Gelatin.*—Gelatin dissolving in the shape of a long, narrow funnel ; fluid cloudy ; a slight but undoubted green fluorescence exists ; old culture, dissolved gelatin, yellow ; and thick white sediment.

*Agar-agar.*—Culture forms a yellow-white, soft, semi-transparent coat, tending to flow.

*Potato.*—Culture forms a profuse, soft, flowing coat ; at first of a light brownish-yellow, later, at times, of a deep flesh color ; surface of condensation water covered by the same, raised up by bubbles.

*Potato without oxygen.*—Growth the same.

*Milk.*—No visible change in fifteen days.

*Milk and litmus.*—No change in three days ; later the blue color gives place to a light gray, not observed in cultures of other species which bleached the litmus.

*Milk-sugar.*—Growth good ; gelatin dissolved ; much gas formed ; no fluorescence noted.

*Beet-sugar*.—Growth same ; fluorescence noted.

*Gelatin*.—Limited growth only ; no gas.

*White of egg*.—No change in three weeks.

Found in one case of summer diarrhœa in good numbers, and one of the kittens with cholera infantum.

#### BACILLUS U.

*Form*.—A very even-looking small bacillus,  $.2 \times 5 \mu$  to  $.3 \times 1 \mu$ , with well-rounded ends ; often in chains of from two to four.

*Motion*.—None observed.

Stains the slowest of all the species noted.

*Plates*.—Colonies form small white dots.

*Gelatin*.—Culture of a creamy tint, not unlike that of true Brieger's bacillus ; head usually of the mesentery type ; in time fairly thick ; shaft strong, uniform to the bottom, but no bulb. A halo appears about the shaft of old cultures.

*Agar-agar*.—Culture forms on the top part a white, transparent, thin line ; the lower more moist parts covered with a thin, opalescent, white coat.

*Potato*.—Culture forms a soft, rather thin, faintly-yellowish growth ; condensation water clear, with bubbles.

*Potato without oxygen*.—Growth same ; white.

*Milk*.—No visible change in fifteen days.

*Milk and litmus*.—Blue color slowly fades.

*Milk-sugar*.—Growth good ; a few gas-bubbles.

*Beet-sugar*.—Growth good ; bubbles larger.

*Gelatin*.—Growth good ; no bubbles in five days.

*White of egg*.—No change in three weeks.

Found in one case of summer diarrhœa, one experiment kitten, and both of the cholera infantum kittens.

#### BACILLUS V.

*Form*.—Irregular ; apparently partly-degenerated bacilli ; look like pieces of root.  $1 \times 5 \mu$ .

*Motion*.—None observed.

Stains readily.

*Plates*.—Cultures dissolving, forming slanting cups, with



clear fluid and a light greenish-yellow surface-coat. The deep colonies appeared as yellow balls.

*Gelatin*.—Culture yellow; gelatin dissolved from top down; no trace of shaft. Fluid yellow, with an upper yellowish coat and an abundant yellow sediment.

*Agar-agar*.—Culture forms a rather soft, thick, slowly-spreading lemon-yellow mass.

*Potato*.—Growth is rapid, and in a day spreads over the whole of the inoculated surface. The culture forms a soft, glistening, thick, sulphur-yellow coat; the condensation water is covered with the same.

*Potato without oxygen*.—No growth occurred.

*Milk*.—The milk remains unaltered, but a sulphur-yellow growth forms on the surface of the cream.

*Milk and litmus*.—Blue fades; does not change to red.

*Milk-sugar*.—No growth in seven days.

*Beet-sugar*.—No growth in seven days.

*White of egg*.—Becomes cloudy in the course of a week.

Found in four cases of summer diarrhœa, always in fair numbers, and one case of diarrhœa in an adult. Had no effect on a guinea-pig.

#### BACILLUS W.

*Form*.—A straight, round-ended bacillus,  $.5\ \mu$  broad and 1 to  $2\ \mu$  long; often in twos.

*Motion*.—None observed.

Stains well.

*Plates*.—Cultures appear as small yellowish balls, with short projecting hairs, on surface a narrow band of dissolved, clear gelatin about them.

*Gelatin*.—Young growth white, old yellow; gelatin dissolving from above down; fluid cloudy; heavy sediment; shaft not dissolving till late; finally granular to the bottom.

*Agar-agar*.—Culture mottled with semi-transparent spots, pure yellow in color, soft and flowing.

*Potato*.—Culture is slow to grow, but ultimately forms a thin, transparent, fluid, dirty-yellow coat over the whole potato.

*Potato without oxygen*.—Growth good, but more brown in color.

*Milk*.—Milk divided into a cloudy whey and a few small curds or flocculi.

*Milk and litmus*.—Blue does not fade or alter, but a few flocculi appear at the bottom, and a blue cloudy whey above; if undisturbed, a clear zone just below the cream.

*Milk-sugar*.—No growth in seven days.

*Beet-sugar*.—No growth in seven days.

*White of egg*.—In a few days the bottom of the tube becomes filled with a dense white cloud, which gives the impression of the white of egg being dissolved.

Found in six cases of summer diarrhoea, and in both the cholera infantum kittens. Had no effect on a guinea-pig.

#### BACILLUS X.

*Form*.—Uniform; little bacilli .3 x 1  $\mu$ .

*Motion*.—None observed.

Stains well.

*Plates*.—Colonies form small yellowish-white beads and blotches.

*Gelatin*.—Growth white or buffy; head smooth, thick, viscid, good-sized, with an open pit or crater over the shaft; shaft very strong, with leaf-like processes. Close examination shows that the crater is in connection with a tube following the line of inoculation; a veritable scape vent for gas.

*Agar-agar*.—Culture forms a soft, opaque, narrow line down centre, with bubbles in condensation water.

*Potato*.—Culture forms an abundant white, thick, semi-transparent growth. Condensation water thick and cloudy.

*Potato without oxygen*.—Growth good, with many bubbles.

*Milk*.—No visible change in fifteen days.

*Milk and litmus*.—Blue changed to red, then bleached from below up; gas formed, but no curds.

*Milk-sugar*.—Growth good; many bubbles and much gas.

*Beet-sugar*.—Same, except gas not quite so abundant.

*Gelatin*.—Growth good; much gas formed.

*White of egg*.—Clouds are formed.

Only found in one case of summer diarrhoea occurring late

in the season; then pure in large numbers. Had no decided effect on a guinea-pig.

MICROCOCCUS Y.

*Form.*—Occurs as micro- and diplococci .5  $\mu$  in diameter; at times does not divide, then a bacillus .5 x 1  $\mu$  formed.

*Motion.*—None observed.

Stains well.

*Plates.*—Colonies appear as small beads and flatter blotches.

*Gelatin.*—Growth white; head limited, thin, dry; shaft at times simple, but often forming balls all the way to the bottom. Signs of gas.

*Agar-agar.*—Culture forms a very narrow, thin, white line.

*Potato.*—Culture forms a limited, soft, transparent, white growth not easy to see when looked at from in front.

*Milk.*—No visible change in fifteen days.

*Milk and litmus.*—Blue faded in old cultures; no other change.

*Milk-sugar.*—Growth good, with a good volume of gas.

*Beet-sugar.*—Same as above.

*Gelatin.*—Growth fair, decidedly less than with the sugars; gas also less.

*White of egg.*—No change in three weeks.

Found in one case of summer diarrhoea. Had no effect on a guinea-pig.

BACILLUS Z.

*Form.*—A bacillus 1 x 3  $\mu$  on gelatin, 1 x 2 to 1 x 8  $\mu$  on on potato, also chains with segments 2  $\mu$  long.

*Motion.*—None observed.

Stains well.

*Plates.*—Colonies form the small white beads or flatter spots.

*Gelatin.*—Growth white; head of the mesentery type, or extending by distinct branches; at times thin, with an even border; shaft strong to the bottom.

*Agar-agar.*—Culture forms a narrow, white, semi-transparent band.



*Potato.*—Growth of culture good ; the upper part tending to dry and form a clear brown color, the lower more moist parts yellow brown. Condensation moisture very thick, at times depositing some black substance on the surface of the test-tube.

*Potato without oxygen.*—Growth same ; culture white ; no black deposit occurred.

*Milk.*—No change, except a thickening of the bottom, in fifteen days.

*Milk and litmus.*—Blue changed to red in two days ; red then bleaches from below up ; later a slight thickening in the bottom occurred, but no true curds.

*Milk-sugar.*—Growth and gas both fair.

*Beet-sugar.*—Same.

*Gelatin.*—Growth fair ; no gas.

*White of egg.*—No change in three weeks.

Found in four cases of summer diarrhoea and one experiment kitten. Had no effect on a guinea-pig.

(To be continued.)

## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

**Le Pileur : Infantile Mortality due to Syphilis.** (*Bulletin Obst. and Gyn. Soc. of Paris*, December 13, 1888.)

Fournier, in discussing the question of the depopulation of France in 1885, stated that syphilis destroys sixty-eight per cent. of infants born of syphilitic parents. Even this figure is far below the true mark, for in many fatal cases the syphilitic history cannot be traced. Whatever the cause may be, there is no publication which will enable one, even on the smallest scale, to establish a comparison between children who are born of syphilitic parents and those who are born of the non-syphilitic. Two reasons for the difficulty of establishing by comparative facts the influence of syphilis upon infantile mortality are the difficulty of uniting the necessary data in the accouchements of a great centre, and the absolute insufficiency in the reports which are made concerning abortions. The first difficulty is as great or even greater, if one sought to obtain statistics from a rural instead of a city population, and it occurred to the author that this difficulty could be obviated in great measure by investigations upon large numbers of women who might be collected together in some penal or reformatory institution. The prison of Saint-Lazare was accordingly selected for such a purpose, in which the author was attending physician. Statistics were compiled only from among those who were incarcerated in the prison, not from the vast number of those affected with venereal disease who attended the out-patient department. The classification included a first group composed of women who had borne children before they contracted syphilis; a second composed of those who had borne children after having contracted syphilis; and a third composed of those who had borne children both prior and subsequent to contracting syphilis. The investigation included accouchements in the prison and their results, with the proportion of syphilitic children and the consequences. A very large number of these prisoners were not public prostitutes, but had been infected by their husbands or lovers. There were also many, doubtless, who had syphilis, in addition to those who were under treatment, for no one was examined or treated unless she desired it. During the four years, 1881

to 1885, there were six hundred and forty-three cases of syphilis which were under observation in this prison, of which one hundred and thirty gave histories which were available for this analysis. Of the one hundred and thirty cases, sixty had contracted syphilis after having had children, fifty-two before having children, and eighteen both before and after. The sixty women of the first group gave a history of one hundred and sixty-six pregnancies, in eight of which there were still-births; in seventy-two the children were born living, but died soon afterwards; in eighty-six the children had survived at the time of this investigation. Of the fifty-two women who contracted syphilis before gestation, one hundred and twenty-two pregnancies resulted, in ninety-three of which the infants were still-born; in twenty-two they were born alive, but survived only a short time; in seven they were living at the time of investigation. Of the eighteen women who had pregnancies both before and after contracting syphilis, there were no abortions before this disease was contracted, and twenty-one after; no still-births before, six after; twenty-seven children born living before the disease and dying at a subsequent period, and three born after it, dying subsequently; sixteen survivors of those born before infection, and one of those born after.

The conclusions from the foregoing and additional investigations in the same direction were the following:

1. The population of this prison for females might be considered the analogue of almost any city.

2. All classes of society were there represented.

3. The number of pregnant or recently-delivered women in this prison was analogous to the proportion which one would find in almost any community.

4. The social conditions of these imprisoned women varying, the influence which syphilis exerted upon the products of conception should vary with them the same as in any community.

5. The analysis which was made of one-third of all the cases seen was an analysis of cases taken as they came, and may be considered as indicating the influence of syphilis upon natality and the vitality of the products of conception in the entire prison community, if each number in the tables be multiplied by three.

6. This report may serve as a basis for approximate calculation as to the fatality of syphilis in any given number of women, especially with reference to the period of gestation and the first few months of life of the children.

These general conclusions are therefore warrantable:

1. Of one hundred pregnant women (in a community like Paris) fourteen will be syphilitic.



2. Of one hundred children conceived by syphilitic mothers, only seven at the outside will survive the dangers incidental to such offspring during foetal life and the first few months of extra-uterine life.

3. Of one hundred children conceived in Paris, thirteen will die solely on account of syphilis in the mother, independently of all other causes of mortality.

A. F. C.

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## II.—MEDICINE.

Pfeiffer: The Value of Aspirating Punctures in Chronic Hydrocephalus. (*Rev. Mens. des Mal. de l'Enf.*, December, 1888.)

Aside from the dangers of local infection, which may be easily avoided by rigorously following antiseptic principles, puncture of the lateral ventricles may lead to other complications which deserve to be taken into consideration. There is, on the one hand, the entrance of air into the cranial cavity, and, on the other hand, arterial hyperæmia of the brain which may result from too rapid depletion of the ventricle. To avoid these accidents the author recommends the exercise of manual compression upon the cranium during the puncture, and care that the flow of the liquid from the ventricle should take place slowly and regularly, and these two conditions may be realized with such an aspirator syringe as was described in 1867 by Mosler. With reference to the technique of puncture with the aspirator, it may be said that this can be best done through the anterior fontanel, and that the needle should be inserted away from the median line so as to avoid wounding the superior longitudinal sinus. Two cases in which this plan was tried by the author are described minutely. In the first five punctures were made within six weeks, seven hundred and sixty grammes of serum being withdrawn. The improvement in the case was only transient. In the second case the punctures were made at longer intervals than the first, but the results were not more satisfactory. The conclusion from this experience might be that the effect of these punctures is almost *nil*, the withdrawal of the serum being almost immediately followed by its reproduction. Nevertheless this treatment need not be entirely rejected, for there are several recorded cases in which a cure has been obtained; and, though the effect of the punctures might be only transient, they would facilitate to a certain extent and for a certain period of time the development of the nervous centres, and may be practised without the least danger

to the life of the children. When they are made with all necessary precautions they are not followed by any local inflammatory reaction. For those cases in which phenomena of compression of the brain appear, with convulsions, etc., this mode of intervention is quite warrantable. A. F. C.

De Rause: *Experimental Therapeutics of Cholera*. (*Gaz. Méd.*, February 9, 1889.)

The doctrines which relate to the microbial nature of infectious diseases have, for practical consequences, first, the prevention of the invasion of the organism by the microbes, a form of prophylaxis by which surgery and obstetrics have greatly benefited; then the pursuit of the microbe which has penetrated the economy, its destruction if possible, the prevention of its development and proliferation, and the neutralization of the toxic effects of the soluble products which it engenders. The method of the experimental researches which are suitable for the elucidation if not, as yet, for the solution of these different problems seems to have been entirely traced. The microbe having been isolated, it must first be studied as to its morphology, its evolution, the products which it secretes, the media which are favorable or unfavorable to its development, the conditions which augment or diminish its virulence, and the substances which contribute to the activity or the neutralization of its effects. For this first phase of investigation one must experiment, like the chemists, in glass vessels. Then comes the second phase,—experimentation upon animals. The conditions of receptivity or of relative immunity to the action of the microbe are studied, the conditions of the attenuation of its virulence with reference to the animal itself, and those which refer to the modifications experienced by the microbe, or the direct action which may be exerted upon it or upon its secretions in the living organism. The third phase of investigation has man himself, the diseased person, for its field. In this field one cannot use too much prudence in investigating, nor too much reserve in drawing conclusions.

The therapeutics of cholera traverses with some appearance of success the first two phases which have been mentioned. Cornil has wisely said that it is necessary to wait for the results of the third before making definite statements. At present it appears to have been demonstrated by experiments—in glass—that the bacillus of cholera, which finds a favorable medium for its culture in pancreatic paste, ceases to develop in the presence of salol. Experiments with animals tend also to show that salol will effectively combat the development of this bacillus in the intestine within which a given quantity of the culture

of the bacillus has been received. These results encourage the use of salol in the human subject, especially as it is an inoffensive agent.

A. F. C.

**Espine: Treatment and Prophylaxis of Diphtheria.** (*Gaz. Méd.*, February 9, 1889.)

The author has controlled and confirmed the experiments of Löffler with reference to the bacillus of diphtheria. He also concludes that diphtheria is, at the beginning, a local infection like cholera, and that the false membrane is not, as has heretofore been considered, the first symptom of an affection which is general from the beginning. The general symptoms are the result of the intoxication of the organism, which has for its point of departure the diphtheritic mucous membrane, not a microbial infection of the blood. Hence the importance of the local treatment which ought to precede and accompany the general treatment, the latter consisting solely in means for sustaining the strength of the patient. The author agrees with Wagner, Fontheim, Hanon, Weise, and others, in recommending salicylic acid in preference to all other drugs, and advises that irrigation with a two to one thousand solution be begun as nearly as possible at the beginning of the disease, and repeated every hour or two. If the false membranes have already become thick and of considerable extent, one should add to this treatment applications of lemon-juice, glycerole of chloral, etc. In the author's opinion, salicylic acid is the best parasiticide for the bacillus of diphtheria. Renou takes a view which is directly opposed to that of the author, in that he believes that diphtheria signifies a general infection from the beginning. From this point of view, general treatment becomes of greater importance than local. The two methods may be combined by placing the patient in a warm and moist atmosphere impregnated with carbolic acid. The effect will first be upon the parts invaded by the false membrane, and then upon the general infection through pulmonary absorption. Prophylactic measures are most important of all, patients being isolated and all surrounding objects disinfected.

A. F. C.

**Le Gendre: Ascites in Children.** (*Le Concours Méd.*, March 2, 1889.)

Ascites may be present at all periods of childhood. In the fœtus it is usually associated with cirrhosis; it is a cause of dystocia, and demands puncture before labor can be accomplished. In the great majority of cases in children, it depends upon peritoneal tuberculosis, or exceptionally upon compression of the *vena portæ* by the caseous glands. It may also



depend upon atrophic or hypertrophic cirrhosis. In all cases whenever ascites exists its cause should be searched for, since it is almost certain that there is no such thing as idiopathic cirrhosis.

The prognosis and the therapeutics depend upon the etiological diagnosis, for, while in atrophic cirrhosis in children the result will inevitably be a fatal one, in hypertrophic, syphilitic, or miasmatic cirrhosis a cure is sometimes possible by the use of mercurials, iodides, and quinine.

In ascites from peritoneal tuberculosis the prognosis is not absolutely bad; such cases are sometimes curable, either from spontaneous efforts of the organism or by means of suitable therapeutic efforts. For such cases the treatment should be creasote, cod-liver oil, and a milk diet. For the peritoneal effusion one should use purgatives and diuretics, and the constant action of revulsives, by means of applications of iodine, vesicants, and ignipuncture, alternating with such resolvent measures as elastic collodion and methodical compression. Puncture should not be resorted to until one is forced to it by imminent dyspnoea from pressure upon the diaphragm. It is possible that the pressure of the ascitic fluid may retard the development of the tubercular process.

A. F. C.

Müller: *Variola and its Treatment.* (*Rev. Mens. des Mal. de l'Enf.*, March, 1889.)

The author prefers the expressions grave and benign variola to those of variola and varioloid. Of the grave form he distinguishes, in addition to simple variola, the confluent and hemorrhagic varieties. As to the benign varieties of variola, their treatment is purely symptomatic. In the grave varieties the therapeutic indications will change according as the stage is the febrile stage of invasion, the apyretic stage of eruption, or the stage of suppuration. In the first stage refrigerants should be used in the form of fresh air, cold compresses, and cold wrappings. This method of treatment will give more favorable results than the internal use of antipyretics, and will combat in a more rational way the harmful effects produced by the intoxication of the organism. In the second stage the object of treatment is to prevent the transformation of vesicles into pustules, and thus eliminate the third stage, or at least make it as inoffensive as possible. Warm baths will best fulfil this indication, or sponging with warm water if the baths are impracticable. This should be done several times daily, and particular care should be used to apply the water to the eyes to prevent conjunctivitis. The desiccation of the pustules may also be hastened by the use of an ointment of glycerin. Upon

the head a weak solution of carbolic acid (1 : 300) may be used. For the treatment of the bucco-pharyngeal mucous membrane a milk diet is advised and an emulsion of almonds. A weak solution of chlorate of potash may also be used as a gargle.

If the patient has already reached the stage of suppuration before being seen, or the case is one of confluent variola, external treatment should take the place of internal medication. All parts which are the seat of the eruption must be covered with compresses dipped in a solution of acetate of albumen. The largest pustules should be opened and the ulcerations powdered with iodoform. During the period of desiccation a starch-water bath should be taken every two or three days. The author's plan of treatment is based upon an experience in ninety-three cases.

A. F. C.

**Baumgarten :** The Conditions which complicate Hypertrophy of the Tonsils. (*Rev. Mens. des Mal. de l'Enf.*, April, 1889.)

Hypertrophy of the tonsils may be congenital or acquired. It is directly associated with a scrofulous condition. The lesions of this condition are not limited to the tonsils: the bucco-pharyngeal cavity, nose, ears, larynx, trachea, and bronchi are successively involved. There is marked change in the voice, the movements of the pillars of the pharynx are limited, and the muscles which preside over these movements finally atrophy. Hypertrophy of the tonsils also predisposes to parenchymatous, follicular, and phlegmonous amygdalitis, to infectious lacunar angina, and even to diphtheria. Frequent concomitants are also catarrh of the pharynx, granular pharyngitis, and various reflex necroses. Hypertrophy of the tonsils also entails atrophic rhinitis, dry pharyngitis, and the development of adenoid vegetations in the naso-pharyngeal cavity. It would therefore appear that hypertrophied tonsils should be treated as early as possible, and not later than the fourth or fifth year. The proper treatment is removal, and to prevent the possibility of hemorrhage the extirpation should be accomplished with the galvano-cautery.

A. F. C.

**Boicesco :** Erythema Nodosum of Paludal Origin. (*Rev. Mens. des Mal. de l'Enf.*, April, 1889.)

Obedenaro has given this term to a manifestation of malaria which is not infrequent in Roumania, and which has frequently led to errors of diagnosis. The author publishes an account of twelve cases of this disease, and gives a succinct description of the disease, which he considers as entitled to separate consideration, although one of the phenomena of malaria. The dis-

case has thus far been observed exclusively among children, and is an inflammatory efflorescence of the skin affecting those who have suffered malarial intoxication. The eruption consists of round, red nodosities varying in prominence and in dimensions. It is not generally observed until there have been several attacks of malaria, and is the more distinct as the attacks have been more frequent and have not been combated with a salt of quinine. The eruption first appears upon the anterior region of the legs, then upon the upper limbs. The nodes are round, prominent, and sometimes fuse together. They gradually increase from the size of a pea to that of half a dollar. They are elastic in consistency like the gummata of syphilis, and are sensitive to pressure. During an attack their color is bright red, but in the interval of attacks they are pale. At times they seem to be attended with fluctuation, but they always disappear by resolution. They appear in successive crops and follow no regular arrangement. They cause pain a few days after their appearance, if touched; also a burning and gnawing feeling. The prognosis is that of malaria. The diagnosis must be differentiated from rheumatic erythema nodosum, lymphatic and scrofulous erythema nodosum, traumatic ecchymoses, contusions, papular erythema, tubercles, erysipelas, measles, scarlet fever, phlegmons, syphilitic periostitis and gummata, furuncles, and purpura hæmorrhagica of malarial origin. The diagnosis is facilitated by the complete success which attends the quinine treatment. Local treatment, by lotions, ointments, and compresses of various kinds, is badly tolerated, and is always useless.

A. F. C.

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III.—SURGERY.

Blake: Six Cases of Empyema treated by Resection of Rib and Injection of Iodoform Emulsion. (*Lancet*, February 16, 1889.)

CASE I.—Aged six years. Ill thirteen days before operation. Three-quarters of an inch of the eighth rib was resected and about five ounces of pus evacuated, with shreds of semi-organized lymph. The surfaces of the pleura were scraped with a sharp spoon, and four ounces of iodoform emulsion injected, of which three ounces were allowed to run out. The wound was dressed daily for four days, when the drainage-tube was shortened. The tube was removed entirely on the eleventh day, and the patient discharged on the twenty-seventh, cured.

CASE II.—Aged two years. The illness dated from an accident three weeks before the operation, and the diagnosis



of pyo-pneumothorax was made. Three-quarters of an inch of the seventh rib was resected and ten ounces of pus evacuated. The tube was shortened on the third, fifth, and seventh days, and removed on the ninth, and the patient discharged on the twenty-second day, cured.

CASE III.—Aged ten years. Diagnosis: pyo-pneumothorax of four weeks' standing. Three-quarters of an inch of the eighth rib was resected and eleven ounces of extremely fetid pus evacuated. The tube was shortened on the fourth day and removed on the eighth; the wound healed on the fourteenth. The temperature remained normal throughout, and the child was discharged on the twenty-fifth day, having gained five pounds.

CASE IV.—Aged two years and a half. Ill seven weeks before operation. A portion of the eighth rib on the left side was resected and three ounces of pus evacuated. The tube was shortened on the third day and removed on the ninth; the wound was healed on the twelfth. On the thirteenth day the temperature, which had been normal for seven days, suddenly rose, and well-marked signs of broncho-pneumonia developed in the left lung. The child gradually sank, and died on the twenty-sixth day.

CASE V.—Aged one year and nine months. A rib was resected and six ounces of fetid pus evacuated. The tube was shortened on the third and eighth days and removed on the tenth; the wound healed on the fourteenth.

CASE VI.—Aged five years and eleven months. A portion of the seventh rib was resected and nine ounces of pus evacuated. The tube was shortened on the eighth day and removed on the ninth; the wound healed on the twelfth, and the patient was discharged on the twenty-ninth.

The pleural cavity of each case was scraped with a sharp spoon and iodoform emulsion injected, the details being precisely the same as in the first case. It is to be regretted that no post-mortem examination was made in the fatal case. These are certainly examples of very rapid recovery. It is not very unusual, however, to get rapid healing after this operation in children, and the exact value of the emulsion of iodoform is uncertain. It is quite possible that equally satisfactory results might have been obtained in the series by an early removal of the tube, and similar care in other matters.

Owen, Edmund: A Case of Transplantation of Testis from Perineum. (*Lancet*, February 9, 1889.)

The boy was two years and seven months of age. The right testicle was well developed and in normal position. The

left was of equal size, but was situated in the perineum, to the left of the median raphe. The left half of the scrotum was small and drawn over to the right side. An incision was made over the left side of the scrotum, through which the misplaced testicle was reached and freed from adhesions. It was easily drawn down into position, but, as it obstinately slipped back into the perineum, a deep suture was passed from one side of the left scrotum to the other behind the testicle, which effectually maintained it in its new position. The wound healed readily, and the operation proved an entire success. In cases in which a misplaced testicle has failed to develop in size, it is a question whether it is deserving of surgical attention. If it be a fact that an imperfectly-developed gland is specially prone to malignant disease, it would be advisable to remove it without delay. If, on the other hand, it is associated with a reducible inguinal hernia, ablation should also be practised, so that the inguinal canal may be securely blockaded. But, given a healthy child with a well-developed wandering testis, a simple operation like the one described is not only justifiable, but, for every reason, expedient. The condition of malposition of the testis in this case is of considerable rarity, known as *ectopia perinæalis*. It is usually the left testis which is displaced into the perineum. Hutchinson met with a case in which both were so displaced, but this is the only one on record. Spontaneous descent has been reported in a few instances.

The cause of the malposition has been ascribed to irregularity in the attachment of the gubernaculum testis; in several cases it has been felt as the retaining band. Attempts at replacement by other than operative measures have usually proved abortive. As a result of consideration of the causes of failure in several cases, it has been recommended that a child should be permitted to attain the age of two or three years, and that the testis should be secured in the scrotum by means of sutures. Under antiseptic treatment the operation promises most favorably.

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TRANSACTIONS  
OF THE  
AMERICAN PEDIATRIC SOCIETY,

HELD AT WASHINGTON, D.C., SEPTEMBER 20, AND  
BALTIMORE, MD., SEPTEMBER 21, 1889.

(Continued from p. 70.)

CONGENITAL MALFORMATION OF THE HEART,  
RESEMBLING DEXTROCARDIA: ENTIRE AB-  
SENCE OF THE SEPTUM VENTRICULORUM:  
PULMONARY STENOSIS, AND PATENT FORA-  
MEN OVALE.

BY L. EMMETT HOLT, M.D.,

New York.

MALE child, fifteen months old when admitted to the Randall's Island Hospital, March 27, 1889.

On admission he presented the usual symptoms of marked cyanosis; there were lividity of the lips, blueness of the nails, and a leaden hue to the whole face. When the child cried the skin became of a dark, almost purple, color. There was no clubbing of the fingers or toes.

Physical examination of the chest showed the apex-beat of the heart to be one-half inch to the left of the *right* nipple, and about the same distance below it. There was dulness from this point to the left edge of the sternum, reaching as high as



the second interspace. The area of normal cardiac dulness to the left of the sternum gave pulmonary resonance. The resonance was likewise normal over both lungs, front and back.

On auscultation, good respiratory murmur was heard over the whole left lung; and also over the right, excepting in the area of dulness previously noted. There were no râles, no friction sounds, and no evidence of antecedent or existing pulmonary disease.

A loud systolic murmur was heard, with greatest intensity in the second left intercostal space, at the sternal border; it was also quite loud at the apex of the heart, and was transmitted rather upward towards the left shoulder than in other directions. It was distinct over the whole chest in front, but could not be heard behind.

The liver was in its normal position, as made out by percussion; likewise the spleen.

There was very little objective dyspnoea.

The child's general condition was poor: he had ten teeth, was unable to stand, but gave no evidence of any active disease.

The mother stated that he had been a "blue baby" from birth; that he had never suffered from any acute illness,—pulmonary or otherwise,—and that the cyanosis was stationary, and had been for a long time.

The child remained in the hospital for six weeks without any visible change in the symptoms, and no variation in the physical signs.

He then developed acute pleuro-pneumonia of the left lung, from which he died May 1.

There was nothing noteworthy about this attack except that his temperature was quite low, being rarely over 101°. The prostration was great, however, and he died quite suddenly of heart-failure, when apparently improving.

*Autopsy*, thirty-six hours after death.

Upon opening the chest the heart was found deflected to the right about as much as it is usually to the left. The middle lobe of the right lung was hollowed out for its reception, while the anterior border of the left lung was straight.

The right lung was normal ; pleural cavity empty.

The left pleura contained about one ounce of brown serum, and the whole lung was thickly coated with a shaggy layer of fibrin and pus. The lower lobe was completely consolidated, giving, upon section, the usual appearances of lobar pneumonia.

The abdominal organs were essentially normal.

In size, shape, and external appearance the heart did not differ essentially from the normal, except that its anterior landmarks were all reversed.

Upon opening the organ it was found to consist of but three cavities, two auricles and one ventricle. The septum ventriculorum was represented by an elevation in the wall about one-fourth of an inch high, forming a slight ridge which divided the floor of the cavity into two unequal parts ; the left, consisting of about one-fourth, contained a blind pouch about one inch in depth, evidently the rudimentary left ventricle.

The right portion of the ventricular cavity contained three openings : at its upper portion the tricuspid orifice, measuring one-half inch in diameter ; a little below and to the left the pulmonary opening, scarcely one-fourth of an inch in diameter ; still lower the mitral orifice, five-eighths of an inch wide, and reaching to the left as far as the ridge. At the upper part of the common ventricular cavity opened the aorta ; being given off in a direction about on a line with the ridge marking the rudimentary septum.

The mitral and tricuspid valves had the usual number of segments, and these had a normal appearance. Those of the pulmonary valve were much thickened and small, but not otherwise deformed. The aortic valves were normal. The wall of the common ventricle was of nearly uniform thickness throughout.

The aorta was normal, as were also its primary branches. It measured five-eighths of an inch in diameter.

The pulmonary artery was relatively very small, measuring one-fourth of an inch in diameter ; and there was, besides, stenosis of its orifice.

The ductus arteriosus was closed.

The right auricle was normally placed, but its capacity was

only about two-thirds that of the left. The superior and inferior venæ cavæ opened normally.

The left auricle was placed almost entirely behind. Into it the pulmonary veins opened, as usual.

The foramen ovale was patent, the opening between the auricles being one-half inch in diameter.

There were no other malformations found.

*Explanation of the wood-cut.*—The organ has been spread open, showing the greater part of the common ventricle. The probe "1" passes from the pulmonary artery, through the pulmonary opening, into the ventricle. The probe "5" passes from the left auricle through the mitral orifice; "2" passes from the right auricle through the tricuspid orifice, "4." The ridge indicating the rudimentary septum is shown at "8;" the rudimentary cavity of the left ventricle at "7." The left auricle is indicated by "6;" the right by "3." The relative size of the aorta and pulmonary arteries is well represented. The drawing is life-size.

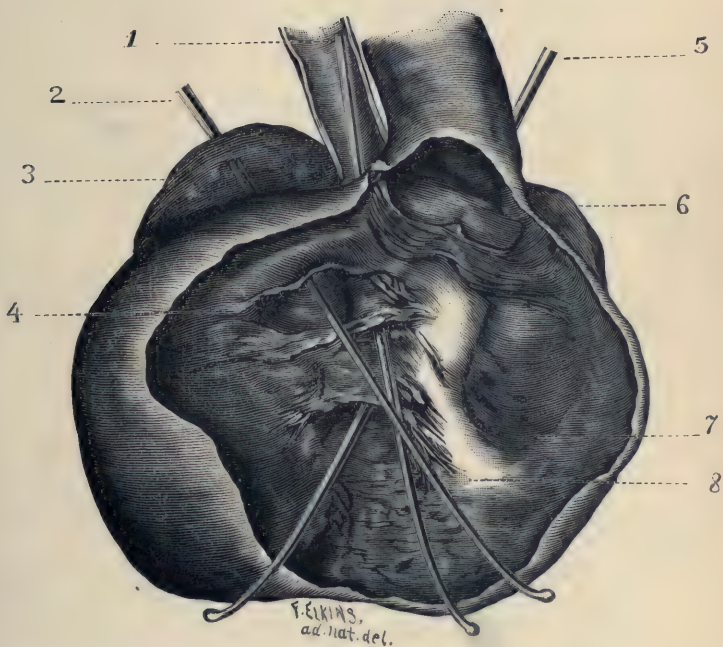
*Remarks.*—During the life of the patient the diagnosis was made of congenital cyanosis, depending chiefly upon pulmonary obstruction, with probably a transposition of the heart.

The writer has not met with an exactly parallel case in medical literature. The malformation was certainly of very early origin in the development of the heart. The two primary factors seem to be failure in the formation of the ventricular septum, and a very small pulmonary artery with stenosis of its orifice. Which of these two came first, or whether they were coincident, it is impossible to say.

The circulation appears to have been a curious mixture of the foetal and the adult types. The greater part of the blood entering the right auricle by the inferior vena cava evidently passed through the wide foramen ovale, as the valvular septa there existing would naturally give the current that direction. In the left auricle this venous blood was mingled with the arterial blood from the lungs. The entire force of the circulation, both systemic and pulmonary, was then carried on by the single ventricle.

The cyanosis was no doubt due, in great measure, to the pulmonary stenosis and small pulmonary artery rather than to





CONGENITAL MALFORMATION OF THE HEART, RESEMBLING DEXTROCARDIA.



the commingling of the blood-currents. It is difficult to understand in such cases as this how the pulmonary circulation could be carried on so well as the symptoms indicate that it was. It is strange, also, that a child should live to be sixteen months old and suffer so little inconvenience.

The deflection of the heart to the right is manifestly due to the overgrowth of the right ventricle, just as in the normal heart the overgrowth of the left ventricle deflects the organ to that side.

#### DISCUSSION.

DR. NORTHRUP.—Dr. Osler has just placed in my hand his article on heart anomalies;\* and in it, after speaking of reptilian hearts, he refers to a case reported by myself which is similar to the one just presented. The child was a blue baby that lived one month. There was one auricle and one ventricle, with entire absence of the pulmonary artery. In this case the left lung had the customary two lobes and the right lung had three. The heart was deflected to the right side at the same angle that it normally bears to the left.

15 EAST FIFTY-FOURTH STREET.

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### A CASE OF ATAXIA IN A CHILD TWELVE YEARS OF AGE.†

BY A. D. BLACKADER, M.D.,

Montreal.

WILLIAM JACOTEL, aged twelve years, is the second of a family of ten children, of whom seven are now dead. Four of these died during an epidemic of diphtheria in 1885: the eldest, a lad of ten years; the fourth, a lad of five years; the fifth, a lad of nearly four years; and the sixth, of a little more than two years. All of these were said to have been in good health, strong and active, before attacked by diphtheria. The seventh, a child of three years, died six months ago from scarlet fever. The third, an infant of nine months, is said to

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\* Keating, "Cyclopædia of the Diseases of Children," vol. ii. p. 751.

† Read by title.



have succumbed to an attack of erysipelas in 1879. And this summer, the youngest, an infant two months old, was carried off by diarrhœa. The three survivors are William, of whom we are now speaking, a girl of nearly four years, and an infant sixteen months old. Both the younger children are at present in good health, with no impairment of the knee-jerk, and no apparent loss of power in the lower limbs.

Both father and mother are said to be in fair health at present. On neither side is there any history obtainable of any relative who suffered from an impairment of gait due to nervous disease. They all appear to have reached a good old age. There is no history either of any special neurosis, syphilis, or tuberculosis. The father and mother are not blood relatives. The father occasionally indulges in alcohol to excess.

William is said to have been quiet as a baby ; was nursed till the tenth month, but was late over teething. There is no history of any convulsions, but as an infant of two years he had a fall, cutting the front of his forehead. This has left a distinct scar involving the bone, still quite discernible on the top of the forehead, a little to the right of the median line. Since the age of five years he has suffered severely from headaches resembling those of migraine. They are described as lasting three or four hours, and as being generally on the same side of the head as the scar ; they were usually associated with vomiting, and passed off during a night's sleep. They recurred somewhat regularly three or four times a month, but were induced by any excitement. Although still recurring occasionally, they are much less severe than formerly. The first distinct symptom of the present illness was noticed six years ago as an unsteadiness in his gait, producing occasional falls, and the lad was in consequence pronounced, by a physician who saw him, to be suffering from St. Vitus's dance. This weakness and staggering gait have gradually become worse, and for this he was brought to the Out-Patient Department of the Montreal General Hospital last June. The strictest inquiry does not elicit any history of true lightning pains. Two or three years ago his mother first noticed some alteration in his speech, and this also has gradually become more marked.

At present he is a fairly-nourished lad, four feet five inches tall, weighs eighty-five pounds, with distinct talipes equinus in both feet and slight curvature in the spine. There is a well-marked ataxic gait. In walking, the body sways from side to side, the legs are widely separated, and the feet are thrown forward. On standing the feet are kept much apart. If placed together there is much swaying of the body, which is only slightly increased by closing the eyes. A very fair attempt is made at walking backward. There is also distinct ataxia in the upper extremities, though much less marked than in the lower. If asked to touch his nose or tip of the ear with his finger quickly, he is generally an inch or two at fault; but he makes a fair attempt at picking up a pin, even with his eyes closed. There is complete absence of patellar reflex, but the cutaneous reflexes are only slightly diminished. There is no muscular atrophy, and no spastic rigidity. Speech is distinctly jerky, with an abrupt pause between the several syllables, and occasionally elision of the last consonant. This is much less marked in reading than in speaking. There are no abdominal or thoracic symptoms; urine is normal; bowels regularly moved daily; sleep generally quiet; no nocturnal enuresis, but his mother states that he takes longer to pass his urine now than formerly. Pulse, while standing, 84,—regular. Intelligence unimpaired.

The following is the report of an examination of the eyes by Dr. Stirling:

“Vision normal; accommodation active; pupils even, oscillating three mm. Color vision normal; field free; fundus, slight posterior staphyloma, vessels slightly smaller than usual; no nystagmus, but some slight ataxia of muscles of eyeball.”

Dr. Wharton Sinkler (*Med. News*, July 4, 1885) relates a very similar case, in which there appears to have been also some interference with the urinary centre.

During the past few years the disease known as Friedreich's ataxia has been fully recognized by the profession, and instances of its occurrence have been recorded from time to time in the medical journals, so that the salient points of difference between it and Duchenne's tabes dorsalis are now generally

acknowledged. "Transitional cases," as Dr. Ormerod calls them, are, however, always interesting, and those mentioned by him in his "Critical Digest" (*Brain*, vol. vii. pp. 111) are still amongst the most noteworthy. Amongst these is the case observed by Carré, in which there was well-marked heredity and an affection of speech, yet the disease began with numbness in the feet and legs, at the age of twenty-two years, and diplopia was observed. In the three cases reported by Dreschfield there was also distinct heredity, yet they resemble the classical type in the age at which the symptoms appeared and in the neuralgic pains with which the onset was marked. In Powers's case vomiting appeared among the early symptoms.

In my own case the symptoms point to disease confined almost entirely to the posterior columns, but involving also the medulla. Cerebellar disease would appear to be excluded by the history of the case, the absence of occipital pain, the absence of optic neuritis, the absence of the patellar reflex, and the presence of the ataxia in the upper extremities. The age of the lad (six years) when symptoms of ataxia were first noticed, the impairment of speech, the absence of lightning pains, of any alteration in the pupillary reflexes, would oppose its being classed as a case of true tabes.

The possibility of insular sclerosis, occurring with somewhat similar symptoms, must not be forgotten; but in my patient this appears to be excluded by the history of the case, by the absence of any paresis or spastic rigidity, and by the absence of any eye symptoms. It differs from most of the recorded cases of Friedreich's disease, in the absence of any other known case occurring in the family, in the history of previous migraine, and in the presence of symptoms indicating some paresis of the bladder.



## TWO CASES OF SPASTIC PARAPLEGIA IN THE SAME FAMILY.

BY THOMAS L. LATIMER, M.D.,

Baltimore.

CASE I.—W. L., aged twenty years, was observed first when old enough to walk to be unable to do so, and for some indefinite time thereafter walked only on hands and feet. He was between two and three years old when able to stand alone, and from that time forward has grown steadily, though slowly, worse. About eighteen months ago he was first seen by the writer, and was then substantially in the condition now present.

*Present condition.*—All parts of the body above the pelvis fairly developed for one leading an inactive life; arms and hands used freely and with perfect voluntary control. His general health is excellent, appetite and digestion good; sleeps soundly; intelligence good for one brought up without instruction. His speech is a little slow and thick. Occasionally has involuntary discharges of urine and feces. Both lower extremities are distorted. When sitting the knees are in contact and cannot be separated more than five inches without violence, and the great toes are inverted and nearly in contact at the tips, the heels slightly raised from the ground. When he stands the muscles of his legs become tremulous and both legs rotate inward, the right most. In walking he is obliged to cling to objects for support, and as each foot is in turn raised, it is not only powerfully adducted but is rotated inward, the right especially, until the great toe points somewhat backward. When the foot is carried forward it catches behind the opposite leg. This strong adduction and rotation gives to his progression the appearance of climbing up and rolling around himself. This is especially marked when the right leg is brought forward. There is little, if any, wasting. All the muscles of the lower extremities are rigid and are often agitated in his own attempts at locomotion. Knee-jerk

and ankle clonus greatly exaggerated. No sensory disturbance. Electrical reaction normal or possibly slightly diminished.

CASE II.—D. L., sister of Case I., aged eighteen years, admitted to Nursery and Child's Hospital, June 6, 1888, with well-marked spastic condition. Her general health has always been excellent. Her inability to stand and walk at the proper age first called attention to her condition. After beginning to walk she did so slowly and laboriously. This condition continued with but little observed change until she was about fifteen years old, when the crossed-leg gait was first observed. When admitted to the hospital she presented the condition of robust health now present. The whole of her body, including lower extremities, is plump and well developed. Lower extremities are blue and somewhat cold to touch. Sits with knees in contact, toes inverted, and heels well raised. By using considerable force her knees may be separated about four inches only. In standing and walking her toes become more inverted and heels more raised; her walk is waddling and duck-like, and as if dragging a ball and chain, and her arms are flexed at elbows and held in position like a professional pedestrian. She is decidedly sway-backed. Toes of right foot catch badly at calf of left leg. Knee-jerk exaggerated; ankle clonus readily produced. Tapping patella ligament of one side often causes tremors of the opposite side. Her intelligence is good; she is of amiable temper, industrious, and altogether a well-behaved young girl. Her speech is easy and distinct. Sphincters entirely under control, though until ten years old she had involuntary micturition by day only. Menstruation regular and of normal quantity. There is no sensory disturbance whatever. Superficial reflexes normal. The skin seems hypertrophied; no other trophic disturbance.

On September 27, 1888, her adductors were divided by Dr. Bevan and the legs kept widely separated until the incisions healed. Immediately after the division her legs could readily be separated to almost a right angle with the body; they were kept twenty inches apart at the knees until the cuts were well. The crossed-leg movement is still present since the operation, but to a much less extent, and when sitting she can now voluntarily separate the knees fourteen inches, though the legs

are still strongly adducted. Her heels and toes now rest on the ground in walking; it would seem as if lessening the tension of the adductors had lowered the general muscular tension. In no other particular does her present condition differ from that presented on admission.

The mother is living, in good health, and says no special trouble was experienced at the birth of either child; no instruments were used. Neither child has ever had fits, nor is there any history of acute disease antecedent to this condition.

She has one other son, younger than either of these, and two daughters, one younger and one older than either patient, all in excellent health.

These cases are especially interesting as presenting the only instance of which I have knowledge of two cases occurring in the same family. Dr. Gee, of London, writes Dr. Osler that he knows of no instance in which two members of the same family have been similarly affected, and Dr. Osler informs me he has also failed to observe such an occurrence. No cause for the existence of this condition has been found in either case, unless we consider chronic alcoholism in the father a predisposing cause.

In these cases we see pure cases of spastic paraplegia uncomplicated with any associated disorder. No organ or function of the body, except those necessarily involved in the paraplegic condition, appears to be affected, except the slight thickness of speech and the involuntary micturition and defecation in Case I., and the involuntary micturition in the early history of Case II., and the hypertrophied skin.



A STUDY OF SOME OF THE BACTERIA FOUND  
IN THE FÆCES OF INFANTS AFFECTED WITH  
SUMMER DIARRHŒA. (*Second communication.*)

From the Pathological Laboratory of the Johns Hopkins University.

BY WILLIAM D. BOOKER, M.D.,  
Baltimore, Md.

THIS study was commenced in the summer of 1886 with the view of learning—

1. The species of bacteria existing in the diarrhœal fæces of infants.

The difference between these bacteria and those found in the healthy fæces of infants.

What, if any, species of bacteria appear constantly in the diarrhœal fæces.

The difference in the bacterial vegetation of the fæces of different forms of summer diarrhœa and in mild and serious cases.

The predominating form of bacteria in each case.

2. The biological and pathogenic properties of the bacteria isolated.

The first communication upon this subject was read before the Section of Diseases of Children of the Ninth International Medical Congress, and contained a description of eighteen varieties of bacteria isolated from the fæces of sixteen infants affected with summer diarrhœa.

This article is a continuation of the first, embracing subsequent work, and contains a description of the bacteria isolated from the fæces of fourteen children affected with summer diarrhœa.

The bacteria were isolated by introducing a sterilized glass tube into the anus and inserting through this a smaller and longer tube into the rectum. A discharge from the intestine occurs in a short time, filling the inner tube, which is first

withdrawn and emptied immediately into a sterilized test-tube containing bouillon.

A systematic isolation of all the species of bacteria was made as far as this could be accomplished with our present methods.

Agar-agar formed the chief medium for separating the bacteria; gelatin was used in addition to agar in some cases, but frequently the atmospheric temperature was too high for even fifteen and twenty per cent. gelatin.

Colonies having the slightest difference were transplanted into stab cultures, the number of cultures from individual cases varying from five to twenty. Many of the cultures, however, were duplicates, and the cultures never represented more than eight or nine varieties of bacteria from any one case. Corresponding to the previous results the largest number of varieties were found in cases of cholera infantum.

In addition to the ordinary methods for differentiating bacteria, others were used, as acid gelatin, milk litmus reaction, etc. With these methods varieties were separated that could not otherwise be distinguished.\*

The identification or differentiation of the cultures made from each case proved such a serious undertaking that, as yet, I have been able to test the pathogenic properties of only a few of the varieties of bacteria.

Before giving a description of the bacteria isolated it may be well to briefly review the work done by others on this subject in the past two years.

The fundamental work of Escherich upon the bacteria in the healthy intestine of sucklings has, in the main, been confirmed by the subsequent investigations of Baginsky and others. Baginsky,† however, has made a more especial study of the chemical and biological properties of the two constant

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\* For full particulars of the methods used in this investigation, see the original article in the *Transactions of the Ninth International Medical Congress*, vol. iii.

† Baginsky, "Ueber Gährungsvorgänge im kindlichen Darmcanal und die Gährungs-therapie der Verdauungskrankheiten," *Deutsche Med. Wochenschr.*, 1888, and *Zeitschrift f. Physiologische Chemie*, Bd. xiii. Heft 4.

or obligatory milk-fæces bacteria, and reaches somewhat different conclusions from Escherich in regard to the action of these bacteria upon milk-sugar.

Baginsky finds that *bacterium lactis aërogenes*—the constant bacterium of the healthy small intestine of milk-fed infants—produces an acetic acid fermentation of milk-sugar, and not, as supposed by Escherich, a lactic acid fermentation; only a minimum quantity of lactic acid being formed with simultaneous entrance of acetone. The gases accompanying the acetic acid fermentation are carbonic acid, methane, and hydrogen. This acetic acid fermentation proceeds as well without as with oxygen, and is not hindered by the presence of bile ingredients. From these facts Baginsky concludes that in the intestinal tract, where bile is present and oxygen, as a rule, deficient, the same kind of fermentation takes place.

*Bacterium coli commune*—the constant bacterium of the healthy large intestine of sucklings—gives rise to lactic, acetic, and formic acids in its action on milk-sugar.

The difference in the action of the two obligatory milk-fæces bacteria upon milk-sugar consists in *bacterium lactis aërogenes* producing chiefly acetic acid, while *bacterium coli commune* produces, besides acetic acid, a considerable quantity of lactic and formic acids.

In examining the stools of children having acid diarrhœa, according to Koch's culture method, Baginsky succeeded in separating two species of bacteria which liquefy gelatin, one of which produces a green coloring matter and is frequently found in water, the other being non-chromogenic. The latter was found constantly in the diarrhœal stools, and proved quickly fatal to animals, and Baginsky thinks it probably plays an important rôle in the pathogenesis of diarrhœa.

Interesting experiments were made to prove the behavior of this bacillus with the *bacterium lactis aërogenes*. If the two are inoculated at the same time upon gelatin supplied with milk-sugar, the *bacterium lactis aërogenes* shows an active development with evolution of gas, while the white liquefying bacillus ordinarily does not develop and but exceptionally causes a liquefaction in the gelatin. This led Baginsky to the opinion that *bacterium lactis aërogenes*, under conditions most



favorable to its growth, can prevent the development of pathogenic organisms, and that we have, in the acetic acid fermentation of milk-sugar by *bacterium lactis aërogenes*, a remedy which serves in the infant organism to protect the intestinal wall from pathogenic bacteria. When, however, this fermentation exceeds a certain degree, which may happen in abnormal conditions of the intestine, it destroys the *bacterium lactis aërogenes* and lays the foundation for pathological processes of various kinds.

Lesage\* has separated from the fæces of infants affected with green diarrhœa a bacillus to which he attaches considerable importance. He distinguishes two forms of green diarrhœa,—bilious and infectious. In the bilious diarrhœa the green color depends upon an over-abundance of bile and the presence of an abnormal quantity of bile coloring matter. It appears ordinarily between the fourth and twenty-fifth day, and is without further phenomena of disease. In the infectious form of green diarrhœa the stools contain only a small quantity of bile ingredients and are neutral or weakly acid. The green color is produced by a definite bacillus contained in the intestinal contents and stools of children affected with this form of diarrhœa. The bacillus is found in large quantity in the upper two-thirds of the small intestine, more sparsely and in long threads in the large intestine and stools. It is a rounded-end bacillus 2-3  $\mu$  long and 1  $\mu$  wide, and grows by division and spore formation. The latter has only been observed outside of the body in gelatin at 20°-22° C.

The most conspicuous property of the bacillus is the production of a green coloring matter, soluble in water, becoming a darker green when exposed to air. The green color is produced in cultures on different nutritive media, and in gelatin it diffuses through the whole tube. The bacillus does not liquefy gelatin.

No results were obtained when the bacilli were injected into lower animals subcutaneously, but when injected into the blood they appeared in the duodenum in from ten to twelve hours,

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\* Lesage, "De la diarrhée verte des enfants du premier âge," *Bulletin Méd.*, xxvi. 10, 1887.

and caused by their increase in the intestinal contents the green diarrhoea. The same results were obtained when the bacilli were injected directly into the intestine or fed to animals indifferently as to the gastric juice being normal or not. The acidity of the gastric juice hinders growth, but does not destroy the bacilli. The experiments were only successful in young animals.

In the mild form of diarrhoea there are no morbid phenomena beyond the green color and increased number of stools. The severe form may appear as cholera infantum, with a large number of stools and pulmonary and nervous complications.

The bacillus is not found in water or milk. It spreads in the air from the drying diaper and is taken into the mouth in breathing.

The epidemics of Saint-Antoine Hospital dated each time from the entrance of a patient suffering with green diarrhoea, independent of the time of year, and attacked both breast- and artificially-fed children.

#### CONDITION OF THE CHILDREN FROM WHOM THE CULTURES WERE OBTAINED.

The children from whom the fæces were taken for examination were chosen from two thousand children sent to "The Thomas Wilson Sanitarium" in the summer of 1888, affected with summer diarrhoea, with special reference to the severer forms of diarrhoea. Four of the children had cholera infantum, seven catarrhal enteritis, and three dysentery. It must not be understood, however, that sharp lines of distinction between these conditions can always be drawn, but that the cases are arranged according as the symptoms approach more closely the classical description of one or other of these affections.

Under cholera infantum are embraced cases having frequent vomiting, usually after anything is taken into the stomach; frequent watery and often offensive stools; wasting of flesh; more or less collapse; nervous phenomena, such as drowsiness, stupor, or great restlessness. High fever accompanying these symptoms was not observed, the rectal temperature being usually about normal and never over 102° F. While these

cases do not answer fully to what is regarded as cholera infantum by most of the American authorities, they resemble that affection in the greater violence of the symptoms and in showing the effect of some toxic agent.

Under catarrhal enteritis are included cases in which nervous disturbance is not marked, vomiting occurring only occasionally or not at all, the stools not uniform, but composed of lumps in a fluid or semifluid menstruum, often showing under the microscope epithelial and small round cells mixed through the fæces; the stools less frequent than in cholera infantum.

#### DESCRIPTION OF THE INDIVIDUAL CASES.

CASE XX.—Five months old; milk diet; sick two weeks; greatly reduced in flesh; stupor for the past two days; vomits everything taken into the stomach; stools frequent, whitish-yellow fluid, offensive odor, alkaline reaction, and composed chiefly of bacteria; pulse small and frequent.

CASE XXI.—Two months old; milk diet; sick two weeks; emaciated; vomiting; stools frequent, a dark-brown fluid, offensive odor, alkaline reaction; composed of small round cells, bismuth crystals, fungi, and immense quantity of bacteria; pulse feeble and frequent.

CASE XXII.—Eight months old; milk diet; sick three weeks; emaciated; drowsy; vomiting everything taken into the stomach; stools frequent, whitish fluid with white lumps, containing a large number of bacteria; pulse feeble and frequent.

CASE XXIII.—Nine months old; milk diet; sick three weeks; greatly reduced in flesh; stupor; rapid, feeble pulse; constant movement of the tongue; slight fever; vomiting; stools frequent, a dark-brown fluid, offensive odor, and contain a large quantity of bacteria.

CASE XXIV.—Eight months old; milk diet; sick two weeks; reduced in flesh; lies in stupor; vomiting everything taken into the stomach; stools not frequent, six to eight daily, composed of small white lumps in a greenish fluid, offensive odor. Unmistakable symptoms of tubercular meningitis developed in this case a few days after the cultures were made from the fæces.



CASE XXV.—Five months old; milk diet; sick one month; emaciated; stupor; vomiting; stools frequent, watery, and greenish color. Symptoms of tubercular meningitis developed a few days later.

CASE XXVI.—Eight months old; milk diet; sick three weeks; emaciated; stools frequent, white fluid with white lumps, containing a large number of cells mixed through the stool, few animalculæ, and an immense number of bacteria.

CASE XXVII.—Ten months old; milk diet; sick five days; but slightly reduced in flesh; stools green with white lumps, and not frequent.

CASE XXVIII.—Ten months old; milk diet; sick three weeks; emaciated; stools not frequent, grayish-brown color, offensive odor, and liquid.

CASE XXIX.—Five months old; milk diet; sick six weeks; emaciated; stools frequent, with white lumps in greenish fluid, lumps covered with mucus.

CASE XXX.—Five months old; milk diet; sick six weeks; emaciated; stools frequent, composed of white lumps in a greenish fluid.

CASE XXXI.—Twenty-one months old; mixed diet; sick with catarrhal enteritis for two months and dysentery for three days; emaciated; restless; stools very frequent and painful, containing blood, mucus, and a small quantity of greenish fæcal matter; only a few bacteria.

CASE XXXII.—Ten months old; chiefly milk diet; sick one week; reduced in flesh; stools frequent, painful, and accompanied with straining, containing blood and mucus with green lumps; only small quantity of bacteria.

CASE XXXIII.—Twenty-three months old; mixed diet; sick three days; not reduced in flesh; stools frequent and composed of blood and mucus.

Some of the cultures from Cases XXII., XXIII., XXVI., XXVIII., XXIX., and XXXII. were lost through insufficient renewal before being identified.

#### BACTERIA SEPARATED.

Nineteen varieties of bacteria have been isolated, all of which belong to the bacilli. Four varieties liquefy gelatin, the

others do not liquefy it. Four varieties have been previously described,—viz., *bacterium lactis aërogenes*, *bacterium coli commune*, *proteus vulgaris*, and *bacillus A*. Fifteen varieties are not recognized among the bacteria described in the original communication. These are designated by the small letters of the alphabet. Thirteen varieties are inconstant, each variety appearing but once or twice.

Seven varieties—*d*, *e*, *f*, *g*, *h*, *k*, *m*—closely resemble *bacterium coli commune* in morphology and growth in agar, neutral gelatin, and potato, but by means of other tests, to be later described, a distinction can be made between them. It is quite probable, however, that they belong to the same group of bacteria as the *bacterium coli commune*.

On account of many slight variations observed in cultures of the *bacterium coli commune*, Escherich suspected that he was dealing with a number of varieties of bacteria and not one special variety. Considering this view to be correct, and regarding the above-mentioned varieties as belonging to the colon group of bacteria, some member of this group was found in all of the cases, and two or more varieties of this group were sometimes found in the same case. In catarrhal enteritis they were the predominating form of bacteria, especially in the milder cases; but in cholera infantum they were not the most numerous bacteria, and appeared in diminished quantity according to the severity of the disease.

Whether certain varieties of this group of bacteria appear more frequently in the diarrhoeal than in the healthy milk fæces is a difficult question to solve. The variety corresponding in all respects with the culture of *bacterium coli commune* sent to me by Escherich was isolated from a larger number of cases than the other varieties. One variety was only found in two cases of dysentery, and in both cases as the predominating form. This variety differed from the others of the group in not thriving on acid or sugar gelatin.

*Bacterium lactis aërogenes* was found in all of the cases, and in many cases in large quantity, but never as the predominating form. A *bacillus* corresponding in nearly all particulars with *bacterium lactis aërogenes*, but differing from it in not coagulating milk, was found in one case. While this

bacillus had no apparent action on milk, it produced a more active development of gas-bubbles on potato cultures than the bacterium lactis aërogenes.

Two of the varieties of bacteria which liquefy gelatin, proteus vulgaris and bacillus A, were found in cases of cholera infantum and not in the other cases. Bacillus A belongs to the proteus group of bacteria, and resembles proteus vulgaris in many respects. They have similar floating, twisted colonies in gelatin and similar pathogenic properties, but differ in milk litmus reaction and growth on potato. In the absence of a culture of proteus mirabilis for comparison with bacillus A, the relation between these two has not been decided.

Bacillus A is described in the original communication, having been found in four cases of cholera infantum. When it was first studied, 1886 and 1887, comparisons were not made with proteus vulgaris, and as it is difficult to distinguish these two varieties without careful comparison, it is probable that cultures from some of the four cases regarded then as identical with bacillus A may have been proteus vulgaris.

Table II. shows the distribution of the bacteria.

Table I. is taken from the original communication in the *Transactions of the Ninth International Medical Congress*.

DESCRIPTION OF THE INDIVIDUAL SPECIES OF BACTERIA.  
PROTEUS VULGARIS.

Found the predominating form in three cases of cholera infantum. In the case of cholera infantum in which it was not found a number of the cultures were lost from insufficient renewal before they had been differentiated.

*Morphology and biological characters.*—It appears identical in every respect with Hauser's proteus vulgaris. It liquefies gelatin and blood serum, is a potential anaërobic, and in morphology and character of growth upon different media it cannot be distinguished from proteus vulgaris.

*Pathogenic properties: direct injection into the intestine.*—The experiments were made upon half-grown rabbits with the body immersed in a bath of normal salt solution kept at a constant temperature of 38° C., according to Sanders-Ezn's method. The abdomen was opened along the linea alba and 1 c.c. of an



TABLE I.\*  
Showing the distribution of the bacteria.

BACTERIA.		CHOLERA INFANTUM.							CATARRHAL ENTERITIS.						DYSENTERY.		Beginning Diarrhoea.	Healthy.
		I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.
Bacillus A . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" B . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" C . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" D . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" E . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" F . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" G . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" H . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" I . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" J . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" K . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" L . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" M . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" N . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" O . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" P . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" Q . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" R . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" S . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
" T . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Micrococcus U . . . . .		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

\* Taken from the original communication.



eight-days' milk culture injected into the duodenum. A short circular contraction followed immediately and was limited to the point of puncture. In a few seconds wave or rhythmic contractions began just below the puncture and extended down to the ileum. In five minutes circular contractions commenced below the puncture and extended down the duodenum. A similar injection into the ileum caused active rhythmic and circular contractions over the whole small intestine, but the circular contractions were not as powerful as when injected into the duodenum.

The stomachs of the animals contained some food; the small intestine empty.

*Injection into the peritoneal cavity.*—2 c.c. of a fourteen-days' bouillon culture injected into the peritoneal cavity of a half-grown rabbit at 2 P.M. Found dead at 10 A.M. the following day. Autopsy: Peritoneal cavity contained a quantity of bloody serum in which cover-slip preparation showed a large number of organisms resembling the original. Nothing abnormal noticed in the different organs.

*Injection into the ear-veins of rabbits.*—0.5 c.c. of a sixteen-days' bouillon culture injected at 1.30 P.M. In thirty minutes after the injection the rabbit appeared to be sick, and in a short time a contraction of the upper part of the abdomen was noticed, which was followed by a copious pulpy discharge from the bowels.

Found dead at 10 A.M. the following day. Autopsy: Small intestine hyperæmic in places, especially the ileum; other parts were pale. Peyer's patches were prominent. Cæcum contained a large quantity of semifluid mass; colon nearly empty.

Esmarch tubes made from the spleen were thick with liquefying colonies resembling the original. Tubes from the blood in the heart, liver, and kidneys also contained similar liquefying colonies, but the colonies were not so thick as those from the spleen.

Diarrhœa did not occur in all the rabbits tested, but in other respects the symptoms were alike.

*Milk cultures fed to young rabbits.*—Milk cultures from one to three weeks old, sprinkled over cabbage and fed to young rabbits, resulted in death in sixteen to twenty hours. In



some cases diarrhoea was present, but this was not constant. Cultures made from different organs as soon after death as possible were negative, except for the liver, which contained a large number of organisms resembling the original. The liver was soft and contained a large quantity of blood.

#### BACILLUS *a*.

Found in large quantity in three cases of cholera infantum and as the predominating form in one fatal case of dysentery.

*Morphology*.—In fresh gelatin colonies, small, narrow bacilli with rounded ends  $1-2\ \mu$  long and  $0.5\ \mu$  wide. On potato two days in the thermostat the bacilli are longer and many long filaments are seen.

*Growth in colonies*.—Gelatin: When small, and before liquefaction commences, the colonies have a brownish-yellow appearance under the microscope. As they grow larger liquefaction sets in, when they appear white and cloudy to the naked eye, and under the microscope yellow or brownish-yellow and uniformly granular, not lumpy. The borders of the colonies are thick, especially the dependent part.

Agar: The colonies are white, round, large, and somewhat dome-shaped. Slightly magnified, they are grayish-brown, granular, and with ill-defined concentric rings.

*Stab cultures*.—Gelatin: Liquefaction takes place along the line of inoculation in trumpet shape. Liquefaction is rapid, requiring only a few days to liquefy the whole tube.

Agar: The surface growth is thick, luxuriant, and light brown in color. In the depth along the line of inoculation is a well-developed stalk.

Potato: When kept twenty-four hours in the thermostat the culture is luxuriant, moist, light-yellow color, raised surface, and has well-defined borders. Later, the color changes to pinkish-yellow with glistening surface.

*Temperature*. It develops better at  $38^{\circ}\text{C}$ . than at a much lower temperature.

*Action on milk*.—Produces a gelatinous coagulation of milk in two days at  $38^{\circ}\text{C}$ . A thin layer of clear fluid soon appears on the top of the coagulum, which gradually increases at the

expense of the latter until nearly the whole of the coagulum is liquefied. A brownish fluid on top and a cream-colored sediment at the bottom.

*Milk litmus reaction.*—Milk colored blue with litmus becomes a faded blue or fawn color in twenty-four hours at 38° C., and in three days a cream color. In some cultures two layers appear when the coagulum first forms: an upper layer, about one-fourth of the clot being a light fawn color, and a lower layer having a darker color.

*Gas production.*—In milk cultures fine thread-like canals appear along the sides of the coagulum, and small gas-bubbles are seen passing along the canals to the surface. Sometimes the canals are so close together and fine as to give a worm-eaten appearance to the upper part of the clot. No gas-bubbles have been seen on potato cultures.

Spores have not been observed.

*Motility.*—Has a motion of its own.

*Resemblance.*—This variety corresponds in morphology and character of growth with bacillus O, found frequently by Sternberg in the fæces of patients affected with yellow fever.

*Pathogenic properties.*—2 c.c. of a liquefied gelatin culture three weeks old, injected into the duodenum of young rabbits after the abdominal cavity had been opened, in a bath of normal salt solution at 38° C., according to Sanders-Ezn's method, produced rhythmic and circular contractions. A short circular contraction occurred immediately and was confined to the point of puncture. In a few seconds the intestine was quiet, then the rhythmic contractions commenced just below the point of puncture and gradually extended down the canal, reaching the jejunum in five minutes. At this time the circular contractions began in the duodenum and grew in intensity for twenty to twenty-five minutes. The circular contractions were very strong, sometimes obliterating the lumen of the canal, and were accompanied with a twisting motion. The fluid which distended the duodenum was moved down the canal by these contractions. The contractions lasted about forty minutes in the duodenum and jejunum and then commenced in the ileum. In the latter region they were very

weak and were chiefly the rhythmic contraction. No movements were noticed below the ileo-cæcal valve.

One c.c. of a twelve-days' bouillon culture injected into the ear-veins of rabbits resulted in death in one and a half to two and a half hours. Violent convulsions with a number of loud cries preceded death. Autopsy: The liver contained a large quantity of blood which flowed from it after puncture almost as freely as from the heart. Esmarch tubes from the liver, spleen, and blood of the heart cavity contained liquefying colonies identical with the original.

#### BACILLUS *b*.

Found in one case of serious gastro-enteric catarrh.

*Morphology*.—Narrow bacilli with rounded ends 1–1.5  $\mu$  long .5  $\mu$  wide; sometimes they have clear places at the ends or along the sides.

*Growth in colonies*.—Gelatin: Colonies, when small, have a dark centre with a yellow border. As they grow larger liquefaction sets in, when they have a uniform brownish-yellow, granular appearance. Colonies do not develop well on sugar or acid gelatin.

Agar: Colonies are large, bluish-white, and spread out; slightly magnified, they have a light brownish-yellow color.

*Stab cultures*.—Gelatin: Liquefaction proceeds uniformly from the surface.

Agar: White, moist growth on the surface with a delicate stalk along the line of inoculation in the depth.

*On potato*.—The culture has a dirty brown color with a dry and but slightly raised surface.

*Action on milk*.—But little change noticed in twenty-four hours at 38° C.; in two days it becomes gelatinous. Milk colored blue with litmus becomes a faded blue in two days, with a thin dark-blue fluid on top.

*Gas production*.—Not observed.

*Motility*.—Actively motile.

(To be concluded.)



## A CONTRIBUTION TO THE STUDY OF THE SUMMER DIARRHOEAS OF INFANCY.

BY JOHN A. JEFFRIES, M.D.,

Boston.

(Continued from January Number.)

### BACILLUS *a*.

*Form*.—Uniform slim bacilli,  $.25 \times 1 \mu$  to  $.35 \times 1.4 \mu$ .

*Motion*.—None observed.

Stains fairly well.

*Plates*.—Colonies appear as small, flat, circular spots.

*Gelatin*.—Culture white; head circular, thin, covering whole of surface with a peculiar lustre; shaft extends to bottom, but is slight.

*Agar-agar*.—Culture forms a white, fairly thick, transparent band.

*Potato*.—Culture forms but a very slight white, soon-arrested, growth. Condensation water cloudy.

*Potato without oxygen*.—Growth fair; culture with gas-bubbles.

*Milk*.—No visible change in fifteen days.

*Milk and litmus*.—Blue turns to red in three days, then bleaches.

*Milk-sugar*.—Considerable growth, same as in air, but no gas.

*Beet-sugar*.—Considerable growth and a few small gas-bubbles.

*Gelatin*.—Growth fair, and three small bubbles.

*White of egg*.—Water becomes cloudy.

Found in two experiment cats only. Had no effect on a guinea-pig.

### BACILLUS *b*.

*Form*.—Great lumpy, root-like bacteria of all sorts of forms; only set form a bacillus,  $.8 \times 2 \mu$ ; on potato, all of set form.

*Motion*.—None observed.

Stains very dark.

*Plates*.—Colonies form small white beads or blotches.

*Gelatin*.—Growth white or yellow ; head covering most of surface, with a leafy border, thin, dry, opaque ; shaft very strong.

*Agar-agar*.—Culture forms a thick, transparent, distinctly yellow band.

*Potato*.—Culture grows very slowly, for a long time as dry beads, of a light sulphur color.

*Potato without oxygen*.—No growth.

*Milk*.—No change in fifteen days.

*Milk and litmus*.—No change.

*Milk-sugar*.—No growth.

*Beet-sugar*.—No growth.

*White of egg*.—No change.

Found in only one experiment cat.

Besides the above, a pink sarcina, very common in the air of the laboratory, was found as a single colony in four plates, and a yellow bacillus as a lone colony once. These are ruled out as probably contaminations.

The cases from which the cultures were procured are briefly given below :

CASE I., February 11.—Four months old, breast-fed child ; eight to twelve spinach stools a day ; slight fever.

CASE II., March 18.—A marasmatic child, eleven weeks old ; six to twelve green stools a day ; vomiting ; collapse : bottle-fed.

CASE III., April 4.—Chronic lenteric diarrhœa in an adult.

CASE IV., April.—Adult, with attack of temporary diarrhœa.

CASE V., July 26.—Infant, eleven months old ; breast-fed, with green diarrhœa ; fever and prostration.

CASE VI., July 27.—Bottle-fed infant, one month, with green and yellow watery stools ; collapse.

CASE VII., July 27.—Bottle-fed infant, five months old ; many green and yellow stools and vomiting.

CASE VIII., July 27.—Infant, with green diarrhœa.

CASE IX., August 1.—Bottle-fed infant, five months old, with green diarrhœa, vomiting, fever, and collapse.

CASE X., August 14.—Bottle-fed infant, seven months old, with green diarrhoea, vomiting, fever, and collapse.

CASE XI., August 14.—Bottle-fed infant, two months old; diarrhoea; grayish curds and water; collapse.

CASE XII., August 16.—Infant, one year old, bottle-fed, with frequent spinach and curd stools; no fever or collapse.

CASE XIII., August 16.—Same infant as XI.

CASE XIV., August 16.—Same infant as XII. The stools contained the striped fibres of meat. Child much sicker.

CASE XV., August 18.—Bottle-fed infant, seven months old, with green, watery stools; no fever.

CASE XVI., August 18.—Bottle-fed infant; diarrhoea; stools very light, mushy, strongly acid.

CASE XVII., August 20.—Bottle-fed infant, two months old, with frequent green stools.

CASE XVIII., August 22.—Bottle-fed infant, with clear brown mucus stools.

CASE XIX., August 27.—Infant, one month old; Mellin's food; with green and brown stools.

CASE XX., August 27.—Infant, bottle-fed, one year and a half old, with slight green diarrhoea.

CASE XXI., August 27.—Bottle-fed infant, four months old, with green diarrhoea and partial collapse.

CASE XXII., August 27.—Infant, bottle-fed, five months old, with brown and bloody discharges and fever.

CASE XXVII., August 28.—Infant, eighteen months old; on mixed diet; diarrhoea; stools green.

CASE XXVIII., August 28.—Infant, one month old; on Mellin's food; diarrhoea; stools chiefly green slime.

Below follows a table giving the relations of the various kinds of bacteria to the cases. The simply numbered cases are cases of summer diarrhoea in its ordinary forms; no case of true cholera infantum came to hand. Those marked cholera infantum kittens I. and II. record the results of bacteriological examination of the stomach and intestine of two kittens which died of cholera infantum. A lot of four kittens, procured for experimental purposes, proved to be too young to feed themselves. They were therefore fed by hand with milk and hot water half and half, at intervals of about



three hours. Kittens thus raised usually do well. I know of a child who thus raised fourteen kittens in a summer. After a few days two of the kittens came down with violent purging and vomiting of apparently nothing but water. Their whole bodies shrank, the surface became cold and stiff (sclerema), and they died in two and a half days. The other two quickly followed in the same way.

Careful autopsies with bacteriological examinations were made, as the kittens offered absolutely fresh material,—a want so much felt in the study of autopsies performed on children.

The other reports on cats are taken from some of my experiments, to be described later.

Species.	Cholera Infantus Kittens.																						Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		Cholera Infantus Kittens.		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The first thing to be noted, in looking over the results of the bacteriological investigations, is the absence of both *bacillus lactis aërogenes* of Escherich and Brieger's bacillus. Booker reports Brieger's as prevalent and is in doubt concerning the other. At least half a dozen of the species described by me might be considered to fill Escherich's description, except that they have no pathogenic effect on guinea-pigs when introduced under the skin. Comparison with cultures of true Brieger's bacillus show this, though very like in growth, to be invariably more of a bacillus and less of a micrococcus than the forms isolated by me, and also more yellow in color. Experiments with true Brieger's produced a most violent attack of diffuse intestinal hemorrhages, followed by death in a few hours. So the failure of the forms isolated by me to act cannot be attributed to technical errors on my part.

While Brieger's bacillus and the lactic acid bacillus of Escherich were not found, a whole group of species in growth, form, and general physiology closely resembling them have been isolated. This group is represented by bacilli A, G, J, K, P, S, Z; they seem to form a genus; the form is very much alike. All are good anaërobic growers; all form gas; all turn milk distinctly acid; and all closely resemble one another in pure cultures. Many would doubtless class these altogether as one species; but if species are to be recognized at all, we must come to recognizing every fixed difference as constituting a species.

This group occurred—always very abundantly—in eighteen out of the twenty-two cases of summer diarrhœa, and is also well represented among the kittens. They are, however, so much like the harmless forms found by Escherich that they may for the present be laid aside as of no specific significance. They are also almost the only forms tested which failed to produce intestinal troubles in kittens. Excluding these, there is no species, or group of species, left either generally occurring or in sufficient numbers to be regarded as the specific pathogenic plant of summer diarrhœa.

Turning from the general figures to the cases, there are four—XII., XIII., XVI., XXVII.—of summer diarrhœa in which only one kind of plant was found,—namely, K, L, Q, and

X. Of these, L being a strongly dissolving species and destroying all the plates except those of high dilutions, it can only be affirmed that the plant formed a large part of all the bacteria present.

The other three cases are not exposed to this difficulty, since neither K, Q, or X dissolve gelatin. We are thus able in these cases to say that out of the many thousand bacteria taken from the stools all were of one kind in each case.

Bacillus K belongs to the large group which probably does not possess any very active pathogenic powers. The case may well be regarded as one of those suggested by Baginsky, where the ordinary forms develop in excess. A few days later, with improper food, as Case XIV., K disappeared and G appeared in its place, with M, N, and O,—M at least being harmful. Cases XI. and XIII. show the same change from the prevalence of common forms in the first of the attack to active forms later.

Bacilli Q and X, on the other hand, are the two most active fermenters isolated, have a great deal of energy, and, if anything, grow better out of than in the air.

Turning to the biological characters of the species, it is worthy of note that most turned the scale towards acidity, though rarely excessively, and all but four have been shown to grow without oxygen on one or more of the three media tried in this way. Of these four, three are decidedly rare species, and might justly be doubted had they not all been taken directly from the intestines of the kittens; the other species, V, was found in five cases of summer diarrhoea in good numbers, which alone makes contamination improbable. As the cultures in the laboratory abound in degeneration forms, my failure to get anaërobic cultures is very likely due to improper conditions, not to the absence of this power.

However suggestive the above facts may be, they do not clearly indicate any special line of causation, in fact might be results only.

To test their powers of producing disease, a series of feeding experiments was started and partly carried through with the expectation of finding one or two specific forms. Old kittens or young cats, four to six months old, were fed on pure cultures of various species grown in milk.



Cats were selected, as they will feed themselves and thrive on milk; young ones, so as to get the digestive canal in as nearly the same state of development as that of the infant as possible. Very young ones were not used, as they are liable to diarrhoea any way.

Milk was used as a medium as being the food of infants. It was always intended to be fed to the cats in a fairly fresh state before curds had begun to form; a few times, however, a sudden rise of temperature brought on curdling before expected.

The kittens were all breast-fed, carefully selected, plump, in fine spirits, and had always done well. They were kept under watch for at least a week—several for six—in the rooms where the experiments were made, and fed on fresh milk from the same source as that used for the cultures. Before the experiments began some had to be shut up in boxes for the sake of room, others were allowed the liberty of the well-ventilated rooms in which they had lived. Those put in boxes were all put under observation for some time, and control experiments with sterile milk made.

The clinical histories given are of necessity short; cats do not, especially when sick, make nice things to handle, nor do the duties of a practising physician leave much spare time. The nature of the stools in the boxes was easily determined; those from the cats at large were collected by putting a box of fresh ashes in the corner of the room to which the cats invariably resorted.

The autopsies were made as soon as possible, mostly in a few hours; the bodies in the meanwhile being kept packed in an ice-house. At the autopsy corrosive sublimate was freely used on the outside and only hot instruments until all the cultures were made. These were made according to Esmarch.

**KITTEN I.**—Kitten seven weeks old, of good physique, caged, and put on a diet of pure culture of K, two days old, July 14.

July 18.—Still taking pure culture milk of K; faeces softer(?), brown; animal possibly a bit dull. Put on ordinary house milk.

July 21.—Again put on pure culture milk of K, two to three

days old, and so fed until the 25th. By this time the kitten was rather bedraggled from being so long closely confined, but showed no sign of being sick. The stools were just the same as when first caged.

August 2.—Kitten found dead in the room.

*Autopsy.*—Nothing found except a general congestion of intestines, increase of fluid in peritoneum, and a plug of cotton wool one and a half inches above rectum. No ulcerated patches.

KITTEN II.—Healthy, from same litter as No. 1. Caged. Put on house milk of ordinary quality, July 14.

July 18.—Lively; stools much like those of No. 1.

July 21.—More quiet than when put into the box; dirty but well; stools unaltered. Put on sterile milk.

July 25.—Fourth day of sterile milk. Kitten still well; the stools are much lighter in color and have a yellow tinge. Kitten was then released, and, remaining perfectly well, was used in another experiment four weeks later.

KITTEN III.—Healthy, of same litter as No. 1. Caged, and put on a pure milk culture of K, two days old, July 14.

July 18.—Kitten stays most of the time in the corner and does not rouse up if poked. Stools cylindrical, long, dry, dark. Put on house milk.

July 21.—Put on pure culture of K again, two and a half days old.

July 25.—Now has a decided diarrhoea, which began on the 23d. The stools are soft, dark, and increased in numbers.

July 30.—Kitten still has diarrhoea, though at large on house milk since the 25th. It was now ordered house milk with much bicarbonate of soda in it, and in two days the diarrhoea ceased.

KITTEN IV.—Kitten healthy, of same litter as three above. Caged, and put on milk with pure culture of C, two days old, July 14.

July 18.—Kitten looks strong and is active; cries much. Stools altered from the 16th on. Are now brown, offensive, contain considerable mucus, and are as soft as hen-dung. Stools frequent and small. Appetite good. Put on house milk.

July 21.—Diarrhœa has stopped ; again put on pure cultures of C, two and a half days old.

July 25.—Kitten soon began to get very rough ; diarrhœa began in the night of the 22d. The cat is now distinctly shaky, trembles all over, pupils dilated, and do not contract before a light as do those of the other three cats. Let out and put on house milk.

July 29.—Unbeknown to me, the kitten died last night and was buried. Diarrhœa continued to time of death. Up to this time I had had no idea that any of the kittens would die, and was only looking for a diarrhœa.

KITTEN V.—Healthy, ten weeks old. Caged, and put on a pure milk culture, two days old, of C, August 13.

August 14.—Kitten seems fairly well, but is all dirt behind. Stools numerous, quite soft, varying from very light to yellowish. All the supply of milk having coagulated, kitten was let out and put on house milk.

August 16.—Recaged ; diarrhœa stopped ; again put on pure culture of C.

August 17.—Has decided diarrhœa same as before.

August 22.—Supply of milk given out ; put on house milk. For the last three days no separate stools were to be found in the box ; the bottom was simply coated with a layer of fluid manure.

August 26.—The diarrhœa, mostly water, still continues. Kitten let out at large.

KITTEN VI.—Healthy, ten weeks old. Caged, and put on C, August 13.

August 14.—Has diarrhœa ; stools soft as in No. 5, but brown, not light or yellow. Let out on house milk.

August 16.—Recaged ; no diarrhœa, and put on milk of the first generation, from milk inoculated with a small amount of the stools from Case X. of summer diarrhœa.

August 17.—Diarrhœa has begun ; stools rather soft.

August 22.—Kitten has been suffering from a sort of mixed diarrhœa for three days. Some stools hard and dry, others soft with much mucus, and others partly both. Supply of milk has given out. Kitten let out on house milk.

August 26.—Kitten still has diarrhœa ; is thin, worn, but moves about quite actively.



September 11.—Diarrhœa has continued, and, rather to my surprise, kitten died to-day.

*Autopsy.*—But little fat under the skin, muscles pale, lungs and liver light colored but otherwise normal. Stomach full of grumous matter and curds; intestines full of the same and blood; partly broken down but still reddish. Intestines from six inches down to twenty inches very much congested, deep red; the red color all through and through the walls. Below this part intestines swollen and gray colored, with no signs of congestion. Mesenteric glands rather large and very dark (blood?). Peritoneum itself, except over intestines, clear and glistening; contained about two drachms of fluid slightly tinged with blood.

Portions of various organs were placed in absolute alcohol, and later studied.

Lungs normal, except for one lobule, which is partly filled with epithelial cells.

Spleen rather full of leucocytes.

Liver normal, except for an increase of small round cells (leucocytes) along the periacinal vessels.

*Stomach.*—Cells of mucosa clear; nuclei distinct; submucosa and patches along vessels through muscle coat abnormally rich in round cells.

*Small intestine.*—Mucosa, with quite a number of the goblet-cells full of mucus; in places loss of mucosa, in all probability premortal, as the body was perfectly fresh at autopsy, and the mucous cells on the edges show no, or indistinct and irregular, nuclei. Submucosa thickened with patches of leucocytes. Follicles at valve much enlarged and broken through mucosa into lumen of intestines. Other follicles crowded with leucocytes.

*Bacteria.* *Gram method.*—Bacteria in crypts on villi, but not in tissues, except at seat of erosions at valve, of no single form. Lungs, pneumonic spot crowded with micrococci; some single, mostly in two, but a few chains of four. The same plant also in less numbers on the walls of the healthy bronchi. Cultures from intestine gave only G and U.

*Summation.*—Round-cell infiltration of stomach, intestine, especially follicles, liver, spleen; erosions of follicles, congestion of intestines, hemorrhage into same, and catarrhal pneu-

monia. The pneumonia may be laid to one side as a very recent complication, leaving an inflammation of the intestines, followed by hemorrhage; the latter, probably, the immediate cause of death.

KITTEN VII.—A good-sized young kitten, healthy and plump. Caged; put on milk with pure culture of E, August 28. Milk two days inoculated; apparently unaltered.

August 30.—Kitten has a decided soft, brown diarrhœa this morning.

August 31.—Diarrhœa has increased, and the animal is clearly feeble.

September 11.—Death occurred early in the day.

*Autopsy.*—Fair amount of fat under skin and in body. Heart and lungs healthy, stomach containing considerable amount of curdled remains of food; mucosa pale; submucosa swollen.

Intestines almost empty and tightly contracted; pale. Owing to the unusual contraction and consequent mechanical thickening of the various layers, it was not possible to form any accurate opinion as to thickening. No erosions could be seen.

Lymph-glands of mesentery enlarged; gray.

Liver and kidneys appeared normal.

#### MICROSCOPIC EXAMINATION.

*Stomach.*—No gross changes to be seen with Hartnack 4 and 2; 7 and 2 show the mucosa intact everywhere; submucosa and muscular coats normal. The cells of the mucosa are decidedly cloudy, and those of the crypts mostly of the delamorphic kind.

*Intestines.*—Cells cloudy; great numbers of goblet or mucous cells in the upper part of the intestine, diminishing to few or none at the valve. But little change in general submucosa. Follicles enlarged and tightly packed with round cells; in lower part of small intestine breaking through the mucosa and forming erosions.

*Bacteria. Gram method.*—A few, with safranine; many bacteria in the large intestine, just below valve. These are on the surface, between the villi, in the crypts, in the eroded fol-

lices, and to be traced back to the first lymph-glands. Some of the bacteria appear to be in the cells, others outside them.

Cultures from the intestines showed only O in large numbers, and Z; no trace of E, the form fed, to be found.

*Changes found.*—Intestines pale, contracted; great increase in goblet cells; swollen and ruptured follicles; bacteria in the same; lymph-glands enlarged.

CAT XIII.—Healthy young cat. Caged; put on pure milk culture, two days old, of V, August 29.

August 30.—Nothing abnormal noticed; no diarrhœa.

August 31.—Slight diarrhœa,—that is, stools soft, brownish, with mucus.

September 1.—Cat is sick and trembling; no sign of a stool to be found in the cage.

September 2.—Cat died with still no stools in the box.

Owing to my absence for a day and a half no autopsy was made.

CAT IX.—Healthy young cat. Caged; put on pure milk culture, two days old, of M, September 10.

September 11.—Diarrhœa has begun.

September 12.—Cat is now quite shaky; cry is husky, and diarrhœa profuse, the stools being soft and light-colored.

September 16.—The diet on cultures two to three days old, of M, having been kept up, the cat died during the night. The diarrhœa continued to death.

*Autopsy.*—Lungs normal; heart in diastole; liver, spleen, pancreas, and kidneys normal; stomach contracted, containing a little brown, viscid fluid; intestines contracted, pale; for the most part empty; contents of upper part chyme-like, of lower part brownish-pink, viscid; rectum with soft, light-brown stools. No decided changes to be noted in the walls by the eye; mesenteric glands white, normal in size; mesenteric veins gorged with blood.

But slight general pallor and decidedly more fat than might have been expected.

#### MICROSCOPIC EXAMINATION.

*Stomach.*—The cells are all quite clear, even the delamorphic, the nuclei and nucleoli distinct; surface epithelium



perfectly clear, and nuclei staining remarkably well. Walls normal; no sign of infiltration. The section shows a small follicle like those in the duodenum, about which there is some adenoid tissue.

*Small intestine.*—But few scattered round cells below or in villi. In upper part of intestine very few mucous cells, but in the lower part, towards the valve, twenty-five per cent. of the cells are in this state, and the cells are more cloudy.

Solitary and Peyer's patches crowded with large lymph cells.

*Large intestine.*—Slight increase of adenoid tissue; epithelium looks muddy; but few large mucous cells. The Gram method, however, showed a large number of the cells, though small, to be full of mucus; those of the tips of the villi almost all involved. In some of the mucous cells the nuclei are irregular, as if breaking up.

Mesenteric lymph-gland shows a partial crowding of large lymph cells,—that is, the outer portions are packed solid with cells larger than those in the more open parts.

Spleen not crowded; open; Malpighian corpuscles same, with exception of one near the surface, which is packed full of lymph cells.

Kidneys seem to be normal and cells clear, except for a small point under or in the serous coat, which is crowded with leucocytes.

*Bacteria.*—A few in mouths of follicles of stomach, increasing in number to the large intestine; but nowhere invading the tissues.

Cultures from the intestine showed a small percentage of L, and about equal numbers of M and *a*. M was the form fed.

*Results.*—Little besides catarrh of the mucosa was found, and the plant fed.

CAT X.—Cat of fair size, healthy, out in large room; put on milk with pure cultures of E, September 9.

September 12.—The cat is lively and frisky, and plays about just as before being put on diet. The stools, however, are, for the most part, quite fluid, soft, and are in spots distinctly greenish.

September 13.—Diarrhœa has increased; cat quiet; put in a cage.

September 15.—The diarrhoea has increased, and the cat is now feeble. Put on house milk from two to twelve hours old.

September 18.—The diarrhoea continued; the cat remained weak, and died last night rather suddenly.

*Autopsy.*—Lungs normal; heart in diastole, full of fluid blood; liver softer than usual, dark red, full of fluid blood; spleen the same; kidneys softish, cortex markedly light, size increased (?); bladder full of clear urine.

Peritoneum smooth, shining, containing about two and a half drachms of clear fluid.

Stomach white, almost empty, containing a thin coat of dark-brown, slimy fluid; no change in coats could be affirmed.

Intestines contracted, light on the outside, inside with patches of light pink, but mostly almost white, inner coats swollen; contents, a little of the same material found in the stomach. Rectum dark, with semi-solid faeces. Mesentery glands enlarged.

#### MICROSCOPIC EXAMINATION.

*Stomach and intestines.*—Epithelial cells rather cloudy, not so much so as Kitten VIII.; very few mucous cells. There is a certain amount of round-cell infiltration, especially in the folds.

*Kidneys.*—Glomeruli; a trifle swollen.

Spleen rather full of leucocytes, but still open around the larger trabeculae.

Mesenteric lymph-gland decidedly crowded with leucocytes.

*Liver.*—The nuclei stain very little, and in a good many the nucleoli are scattered; spreading from the intra-acinal vessels the parenchyma is infiltrated with deep staining cells of the connective-tissue class, round or triangular. The Gram method brings to light the fact that not a few of these contain stained granular matter, like mast cells.

Bacteria found only in glands and between villi of gut, most in lower part; form the small diplo-bacilli of the non-dissolving group. The liver is distinctly the most affected organ.

Swelling of mesenteric lymph-glands. Cultures made from contents of stomach and intestine failed to show E, the form fed, but did show M, the form fed to Cat IX.

KITTEN XI.—Healthy ; at large in room ; was fed with the whole of an abundant potato culture of E, September 23. This was done by mixing the culture with some finely-minced raw beef.

September 24.—Kitten is perfectly well and stools normal.

September 26.—The kitten is still well and stools normal.

October 1.—Kitten still at large ; put on milk inoculated six days before with E. Before being fed to the kitten the milk was steamed for an hour. The milk curdled on being steamed.

October 2.—Stools light-colored, soft, frequent.

October 3.—Stools soft, clay-colored like dysenteric stools.

October 4.—Constipation ; kitten is weak and restless ; appears to be in pain.

October 5.—Died early in the morning with continued constipation.

*Autopsy.*—Right side of heart dilated ; left side in systole ; blood fluid ; lungs normal ; liver soft, rich in blood ; spleen normal in appearance ; kidneys soft, swollen, cloudy.

Stomach pale, distended with two drachms of green water.

Small intestines white, contracted, empty.

Large intestines greatly distended with refuse of food ; this in places forming dry, solid fæces, in places soft and viscid.

Peritoneum shining, transparent.

No note of glands in mesentery.

Body rather fat.

CAT XII.—Healthy kitten, at large in a room ; fed with C in the same way as last kitten, September 23.

September 24.—No sign of disease ; stools normal.

September 25.—No sign of disease ; stools normal.

October 1.—Kitten put on sterilized cultures of C, same way as last kitten.

October 3.—Marked diarrhoea has begun ; the stools soft, semifluid, brown.

October 4.—Kitten died in the afternoon, the diarrhoea having continued.



*Autopsy.*—No general pallor, and considerable amount of fat. Heart in systole; blood all over body fluid; no sign of a clot; corpuscles settled to the bottom of the vessels.

Lungs pink, apparently perfectly normal. Liver soft, with much blood. Spleen distinctly enlarged, soft, pulpy. Kidneys, subcortical area, distinctly reddened; corpuscles more distinct than usual in cats.

Peritoneum shining, transparent.

Stomach pale, inner coats swollen, mucosa covered with a thick pus-like-looking coat.

Duodenum same as stomach; rest of intestine pale; most parts contracted, but not offering any distinct changes in walls. Lower part of colon and rectum much distended with fæces. Those close to the anus solid, surrounded by a thick coat of mucus; those above soft and slimy.

#### MICROSCOPIC EXAMINATION.

*Stomach.*—Cells of mucosa clear; gland cells of both kinds easily found; submucosa normal.

*Small intestine.*—Cells of mucosa clear, square; nuclei distinct, but few mucous cells. Submucosa with many leucocytes; muscular coat normal.

Large intestine the same.

Kidneys seem normal; no cloudiness.

*Liver.*—Slight increase of young round cells about smaller portal veins and some mast cells, but liver cells normal.

Bacteria in and on surface of intestines, but not one found in stomach.

*Result.*—Catarrh and round-cell infiltration of stomach and intestines, beginning round-cell infiltration of liver, and congestion of large glands of abdomen.

The two cholera infantum kittens were also carefully examined. The intestines and stomach were pale, but the microscope showed no change. The mesentery glands were much enlarged; spleen also enlarged.

The trouble from which the kittens suffered may fairly be compared with summer diarrhoea of infants. In both, diarrhoea, catarrh of the mucosa, round-cell infiltration of submucosa, erosions, enlargement of the lymph-glands.

The cases of constipation in the kittens have their equivalent among children, and are explainable in two different modes. In one class of cases the intestine is small and the contents very dry, even the mucus; in the other, the lower parts of the intestine are enormously dilated and the contents often quite soft, mushy. In the first class it is clear that the dry contents are going to offer great resistance to peristalsis,—would seem able to overcome it. In the second class we have the picture of paralysis of the intestines.

Some may hold the liver too much affected; but it was not more affected than in reported cases of summer diarrhœa in children. The liver is a stumbling-block in pathology to any but experts, especially in children, and the changes reported are of a nature not to be recognized by the methods used by those who deny that it is affected.

The cause of the trouble in the kittens must be attributed to the food. The food was the only change made, and it is utterly improbable that the kittens put on the affected milk all became affected by some accident, while other kittens beside them remained healthy.

The question therefore is, how the food caused the diarrhœa. Since the bacteria were the only change in the food they must be held responsible. The bacteria might act as specific plants working their way into the system, as anthrax, tuberculosis, chicken cholera; or by flourishing in the intestines and there producing poisons, or by producing poisons in the milk. That general infection occurred is improbable; no evidence of it was found, and the autopsies do not indicate it. That the chief mode of action was by dead matter in the milk is indicated by the failure to find the plants growing in the milk in the alimentary canal, by the fresh cultures in meat not acting, and by old sterilized milk cultures acting.

It is apparent, therefore, that with the exception of Experiment IX., the disease was induced by changes wrought in the milk before being fed.

In Experiment IX. the form fed was found in numbers in the intestine, and as it is known to produce decided changes in cultures, it may be assumed to have acted both in the intestines and in the milk. The occurrence of M in a later experiment

tends to strengthen the evidence in favor of its acting in the intestines.

This brings us to the kinds found in the intestines of the kittens. Did they help to produce the disease? This the experiments do not directly answer; but knowing that the forms found are active species, not normal in the intestine, similar or identical with the abnormal species found in the stools of children, it is fair to believe that they did; a conclusion also indicated by the disease progressing after the kittens were put on unaltered milk. Were the active principles limited to the milk, the kittens should not have slowly progressed to death.

To sum up, the kittens became affected with summer diarrhœa, owing to the products of the growth of bacteria in the milk feed and in the intestines.

The variations in the histories of the disease and the autopsies are to be attributed to the variations in the cause. One plant is not the same as another, and several plants were acting in each case. As is natural, the variable, multiple causes gave variable results, closely related in nature as the causes are closely related. No specific plant is indicated, indeed is distinctly contraindicated.

In view of the similarity, often identity, of the bacteria acting on the cats and children, the close resemblance of the symptoms in the two, and the similar results at autopsy, it is justifiable to conclude that the results gained from the kittens may be transferred to the children,—that is, that summer diarrhœa in children is the result of the products of growth of bacteria in the food and in the alimentary canal; a result in unison with the generally expressed belief that fermentation is the cause.

Passing a step further, the symptoms, pathology, and etiology of summer diarrhœa stand in close relationship with the group of symptoms first clearly brought to light by Panum as putrid infection. The animals poisoned by the injection of putrid fluids, sterile or not, sicken and die with two variable groups of symptoms, one referable to the nervous system, the other to the intestines, diarrhœa being a prominent symptom, and the autopsy revealing inflammatory changes in the intestine. Be-



sides the more general effects, many of the poisons formed by bacteria tend, if introduced into the system, to localize their effects upon the intestines. This is also true of Brieger's bacillus and the lactic acid bacillus of Escherich.

Passing to the mode of introduction of the bacteria, it is probable,—almost certain,—judging from cases, that certain forms are able to slip in, multiply, and produce disease in the healthy infant. Very like the two active fermenters O and V are such forms in infants. Other forms need assistance; they are not able to thrive in the normal healthy infant intestine; it is here that the predisposing causes of heat, food, catching cold, and the like, come in. They throw the digestion sufficiently out of order to give the plants a start.

Improper feeding offers fine opportunities, good food for bacteria scarcely acted upon by the infant and perturbed digestion. That the food is not used up by the infant is of great importance, since it leaves the plants free of competitors.

Catching cold may also be a factor, the circulation and functions of the digestive tract being thrown out of gear in a parallel way to that shown by experiment to occur in the lungs.

Heat probably acts directly in common with crowding by debilitating the system; but it is through the food that heat seems to exert its chief influence. During warm weather the milk fed to infants is at a sufficient temperature to allow the bacteria to flourish and produce the same changes that occurred in the milk fed to the kittens. Besides this, bacteria are much more abundant everywhere. Simple heat in the house is not at all the same thing: first, the food is kept cool, though the house be hot; second, the walls and floors are cold and dry, which cuts down the numbers of the bacteria.

A sort of vicious circle thus tends to be established in the summer. Bacteria are flourishing everywhere, and must be constantly gaining access to the stomach. The digestion is disturbed, harmful bacteria slip in and disturb it still more. The intestines react, produce much mucus, altered digestive fluids, and tend to inflame. This favors the bacteria, they flourish still more, the bowels get worse, and so it goes on.

It may fairly be asked why, if bacteria are floating about

and cause so much trouble in infants, more is not heard from them in adults. But diarrhoea is a feature among adults during the same periods, and in all probability due to much the same class of causes. That the diarrhoea does not usually attain such importance is probably due to the greater power of resistance of adults, the more stable nervous system, the more active chemistry of digestion, and the fact that adults are able to take care of themselves when sick. It is also possible that the variable diet of adults gives more forms in the intestines which injure each other and prevent enough of any one poison being formed, and at the same time tends to starve out one form and then another.

In regard to prophylaxis, it is clear that bottle-fed infants should have sterile food, just as adults, especially during the hot months. By this means a swarm of plants are kept out of the digestive tract, and the products of putrefaction and fermentation are avoided. The stomach can then start fair and work unhampered on the, at best, unsatisfactory substitutes for breast-milk.

To avoid the more active forms, which are capable of forcing their own way, is probably impossible, but the stools should certainly be disinfected.

Once given an attack of summer diarrhoea, the desire to kill the bacteria in the digestive tract at once suggests itself. Unfortunately we have yet to find a germicide which is not an infanticide also. No experiments exist for children, but those of Luchsдорff on an adult show that sterile food is quite effective in reducing the numbers of bacteria in the intestines. This probably explains the benefit of sterilized milk in diarrhoea, be it in old or young.

Escherich, who has gone deeply into the subject, and whose articles I would advise those interested to consult, suggests starving the bacteria by giving albuminous foods in cases of fermentation, and vegetable in putrefaction. The difficulty is to tell which is going on in the child, or perhaps both may be acting at the same time. Where sterile food is not well borne, therefore, it seems desirable to cut off food for a time as much as possible. Personally, therefore, the writer has a sort of series from breast-milk to sterilized milk, wine-whey, and, lastly,

spirits and water. Like adults, infants in need will take a great deal of spirits.

As the products of the bacteria produce the damage, it is justifiable to endeavor to render these inert. But here, again, knowledge is very scarce. Iodoform is known to do this with cadavarin; calomel apparently does the same; at least the products of putrefaction diminish in the urine while good evidence of a germicidal action are not forthcoming. Tannin also offers some chance of rendering the products insoluble. But as everything has been tried, and calomel alone holds its own, there is little hope of attaining satisfactory results in this line unless some new drug is found.

The writer is among those having more or less faith in the so-called alkaline treatment, especially as represented by the acid salt bicarbonate of soda. Perhaps it acts in a peculiar manner in virtue of being an acid salt with an alkaline reaction.

Over and above the bacteria it must not be forgotten that we have a child with lesions of the digestive tract to consider. This, though very important, is beyond the scope of this paper.

#### DISCUSSION.

DR. NORTHRUP.—The paper of Dr. Jeffries points positively to the importance of sterilizing milk before it goes into the baby's stomach. Dr. Fruitnight has mentioned that St. John's Guild has taken a step in advance by doing away with long bottle-tubes. The Guild could easily take one more and an important step by sterilizing, on a large scale, bottles and tubes and milk.

At the New York Foundling Asylum the milk destined to go to the feeding of children is sterilized in a chamber of live steam, and, of course, the amount of milk required is enormous. The bottles of milk with cotton stoppers are placed in a metal chamber, in which is a coil of steam-pipe perforated with fine holes along the concave surfaces. The walls of the chamber are cast iron, and the temperature everywhere within is thought to be raised to 212° F., and to be held at that point indefinitely. It has been demonstrated that dry air at 284° F. will kill the spores of anthrax in four hours, and these spores are very tenacious of life. Steam at 212° F. will kill the same spores in five minutes.

If the milk be stored in bottles larger than ordinary nursing-



bottles, it is important to allow it to remain longer, and this point must not be overlooked. The rule may well be laid down that every particle and every globule within the sterilizing chamber should be maintained at a temperature of  $212^{\circ}$  F. for forty-five minutes.

This method of preparing milk at the Asylum has met with the approbation of all concerned,—physicians, Sisters of Charity, nurses, and assistants. Among other reasons is the fact that there is no need to keep the milk in the ice-house, and no need for elaborate preparations.

I feel a deep interest in the valuable work done by Dr. Jeffries, and am glad to hear his results at this time.

DR. BOOKER.—It is gratifying to know that some one else has taken up this difficult question, one of great interest and importance, which, carefully worked out, will no doubt add much to our understanding of the conditions pertaining to the summer diarrhoeas of children.

The subject is complex and apparently endless, and will probably require years of patient, tedious labor before any definite conclusions can be reached.

As the author has only been able, in the time allowed, to give a short abstract of his paper, it hardly admits of discussion.

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## SCARLET FEVER.

A LECTURE DELIVERED TO THE STUDENTS OF THE HARVARD  
MEDICAL SCHOOL.

BY T. M. ROTCH, M.D.,

Assistant Professor of Diseases of Children, Harvard University; Physician to the  
Boston City Hospital and to the Children's Hospital,  
Boston.

GENTLEMEN :—We will to-day consider one of that group of diseases called the acute exanthemata. This group is characterized in a general way by the entrance into the system of specific germs, which, remaining apparently dormant for a time, constitute what is called the period of incubation.

This period of incubation is then followed by certain general symptoms which constitute the prodromal period. These prodromata are again followed by an efflorescence on the skin constituting the period of efflorescence. The efflorescence is

in its turn followed by a period of desquamation, usually more or less pronounced, in proportion to the intensity of the skin lesions which have occurred during the efflorescence.

The acute exanthemata, as a whole, are highly contagious, run a definite course, and are self-limited, facts to be especially remembered when we come to the question of treatment.

In order that we should not be misled in our diagnosis of the unusual and hence more difficult forms of these diseases, we should at once recognize the value of each and all of the above spoken of periods.

Our diagnosis, for instance, should not be unduly biased, or entirely based upon the particular efflorescence which we find upon the skin, whether erythematous, papular, or vesicular, as is so often done by the student. On the contrary, we should look upon the especial type of efflorescence merely as one factor in the problem of diagnosis, which is before us, and give due weight to the knowledge, which, by inquiry, we can usually gain from the characteristics of the other periods.

We must, indeed, remember that the different periods differ widely in the acute exanthemata, that also the different members of this group may occur at the same time in the same individual, and that the efflorescence commonly distinctive of any one of the group may either be so evanescent as to pass unnoticed, or may be replaced by one which would usually be seen in some other member of the group.

Let us, then, before committing ourselves to a diagnosis, make full use of all the evidence laid before us up to the time when we are first confronted by our patient. Let this be our first rule; and let our second rule be, to carefully inspect not only one part of the child, but the entire surface, for much of importance can be learned from the general picture presented by the skin, even if it be but negative evidence that rewards our trouble.

To clearly differentiate the more complicated varieties of the acute exanthemata from each other, we should carry in our minds miniature pictures of the entire course of a typical case of each of these diseases, for these typical pictures differ widely. We should also remember that each of these diseases has its especially typical complications, and that in each member of

the group certain specified organs of the body are most likely to become affected.

With these general preliminary remarks you will now better understand what I have to say concerning one of the acute exanthemata,—scarlet fever,—the most dangerous disease of the whole group, and therefore the most important.

Scarlet fever is essentially a disease of serious complications and grave sequelæ. It is the most irregular of all the exanthemata, and is extremely variable and uncertain. In comparison with measles it is characterized by the short duration of its periods of incubation and prodrome, and by the greater length of its period of desquamation. It is usually epidemic, returning to the same locality after a period of years, but it is also at times sporadic. The epidemics vary in severity, and the sporadic cases may be of the most malignant or of the mildest type. A mild case may give rise to a malignant case in another child, and a malignant case to a mild case. Epidemics of scarlet fever advance slowly, while those of measles advance quickly. The disease may occur more than once in the same individual.

The source and identity of the contagium have not yet been definitely settled; but the skin appears to be the most frequent vehicle of the contagium, and this contagium, whatever it may be, has a wonderful tenacity for clothing, linen, etc., lasting for many months, and then reproducing the disease.

Now, mark especially what I have just said about the contagium, and also the slow advance of the scarlet fever epidemics in comparison with those of measles.

The disease spreads slowly to other individuals and does not appear to be very contagious in its early stages, showing that it is the period of desquamation which is especially to be avoided and isolated, while, as I have already told you in my lecture on measles, it is the early stage of this latter disease which is especially contagious and which for this reason favors the quick dissemination of the disease. The actual microscopic examination of the skin by means of hardened specimens, in cases of measles and scarlet fever, explains in a measure why scarlet fever is so much more likely to be contagious during its stage of desquamation than is measles. I



have already shown you, in speaking of measles, that the pathological process in the skin affects chiefly the blood-vessels and glands, while the tissue proper of the skin, as well as the epidermis, presents no marked changes.

Now, a very different picture is shown on examining the sections of scarlet fever skins, for here we find the pathological process represented especially by exudation-cells, which are very numerous and closely packed, reaching even into the horny layers of the epidermis. Occasionally these exudation-cells are found to have taken the place of the epidermal cells, appearing on the free surface of the skin and being thickly grouped around the excretory ducts of the cutaneous follicles. You will then easily understand why the epidermal cells in a case of measles are far less likely to carry the contagium than these same cells in scarlet fever, and why the possibility of contagium in scarlet fever exists until the desquamation is entirely ended.

As the description of actual cases helps the student to remember important points in the disease, I will in a few words tell you about two children, who lately came under my care, in order to impress upon you the difference between scarlet fever and measles, as regards the period in which they are usually contagious, and the means by which their contagium is usually conveyed. Notice, however, gentlemen, that I say *usually*, for the contagium of both diseases *may* occur throughout their whole course.

A boy, six years old, and his sister, four years old, slept in the same room with their beds close to each other. The boy was taken sick May 1, but remained in the same room with his sister during the day and night of May 2. He was seen by me early on May 3, and was then found to have a well-marked scarlet fever. The sister was taken to the country, and the boy left in charge of a trained nurse. There was then absolutely no communication between town- and country-house by either people, clothes, or letter until June 1, when I was called out to see the sister and found her with well-marked scarlet fever. There were no other cases of scarlet fever in the vicinity of the country-house. The boy at this time was desquamating freely, and the sister was found to have received from the boy, on May 26, what she called a letter, directed from the boy's scarlet fever room by the nurse.

The sister had kept this letter by her in her bed and under her pillow.

The boy, so far as the closest study of the case could disclose, had, during the period of his desquamation, infected his sister at a distance of twenty miles, by enclosing the scarlet fever contagium in an envelope, and this sister had, in the beginning of the boy's sickness, been in the same room with him for thirty-six hours without contracting the disease. In the following year, March 20, I was again called to see the same boy. He was well in the morning, but in the afternoon was found to have a high pulse and temperature, with cough, coryza, and lachrymation, so that it was deemed best to send the sister, who had only been in the nursery with her brother a few hours after he had been taken sick, to her aunt's house, where she was absolutely isolated from the boy. The boy showed a measles efflorescence on March 23, and the sister was taken sick with measles March 30. The sister was then infected at the very beginning of the boy's attack of measles, and after only a few hours' exposure.

Scarlet fever may occur at all ages, but it is rare during the first year of life. The greatest susceptibility appears to be from the second to the tenth year.

There is no known prophylactic for scarlet fever beyond isolation, which for many reasons should be rigorously enforced. Besides the fact that, if the child has passed its tenth year, the chances are very much in its favor of never contracting the disease, we must remember that it is especially important to protect children who are learning or have just learned to talk, for the commonly occurring and often intractable form of otitis, which accompanies scarlet fever, may not only render the child deaf but lead to deaf-mutism.

The period of incubation of scarlet fever is uncertain and irregular, but, as a rule, is shorter than that of any of the other acute exanthemata, and is usually less than seven days, quite frequently only two or three days.

I have already spoken of the variation in type of cases of scarlet fever. This variation in the symptoms of the commonly occurring benign cases and the unusual, malignant cases reaches such a degree that they could well be classified as entirely separate diseases, were it not that the contagium has been proved to be the same, by one giving rise to the other. I will first speak of the benign class of cases, such as you have

already seen in my scarlet fever ward at the City Hospital, and it is this class of cases which you will probably most commonly meet with in your general practice. These cases, as you have seen, run either a simple typical course or are accompanied by complications which make this course variable. The simple typical case of scarlet fever is represented by a disease of sudden onset, with a short prodromal period of from twenty-four to thirty-six hours. The symptoms of this prodromal period consist of high temperature and pulse, sore throat and vomiting. The temperature continues to rise and the efflorescence appears, showing itself first in the throat as red points with a sharp contour and the intervening mucous membrane decidedly reddened. This appearance is especially well marked on the soft palate. The efflorescence then appears on the skin, of an erythematous and punctate character, and, starting on the neck and upper part of the chest, rapidly extends all over the body down on to the limbs and up to the face.

This characteristic order of invasion of the skin aids to distinguish the efflorescence of scarlet fever from that of a common erythema, which comes out everywhere at once, as at times in pneumonia, and from measles, where it begins on the face and extends downward. On running the finger over the scarlet fever efflorescence the resulting white mark remains longer than is the case with common erythema. The efflorescence extends over the body for two or three days. At this time the tongue is much reddened and its papillæ appear to be very prominent, constituting the so-called "strawberry tongue." There is in this period also, at times, great irritation of the skin.

The temperature rises when the efflorescence appears and reaches its maximum at the end of the outbreak, without variation, but there is no decided rise just before or fall at the maximum of the efflorescence, as is the case in measles; on the contrary, the temperature slowly diminishes until the ninth or tenth day from the beginning of the prodromal symptoms, when it becomes about normal. Desquamation begins about the seventh day of the efflorescence in the parts of the skin first attacked and follows the order in which the efflorescence



appeared, but it is not always in proportion to the intensity of the efflorescence. It is furfuraceous at first, but becomes lamellar in the third week from the beginning of the disease.

The period of desquamation sometimes lasts only ten days, but again may continue for two or three weeks, being especially slow in disappearing from the hands and feet. The urine is lessened in the prodromal period, returns to the normal at the beginning of desquamation, and increases during the period of desquamation, amounting, at times, to almost a polyuria; but returning to the normal amount at the end of this period. During the period of efflorescence, especially if the temperature is considerably heightened, a small amount of albumen may appear in the urine, but this albuminuria disappears as the temperature subsides, and it is probably simply the result of the high temperature, as is the case in many other diseases accompanied by a high temperature, and is not to be confounded with the albuminuria representing the nephritis which at times complicates the period of desquamation. The higher the temperature at the beginning of the disease the more stormy the symptoms, and the shorter the prodromal period the more severe will be the case. Eclampsia may usher in the disease. An initial temperature above 104° F. points towards a severe case. There may be slight delirium even in mild cases in the period of efflorescence. The delirium may be very active and yet not be of serious import, provided that the temperature remains moderate. There is considerable reason to suppose that a mild form of nephritis accompanies almost every case of scarlet fever, although in very many cases no clinical nephritic symptoms appear and nothing abnormal is found on examination of the urine. This statement as to the urine analysis, however, is based on the reports of the general practitioner rather than on that of the expert in this branch of medicine, and, in my opinion, we shall in the future have the number of cases which show nothing abnormal in the urine greatly lessened in proportion as the number of expert examinations increases in the mild form of scarlet fever. It may also be said that, in speaking of the frequency of nephritis in scarlet fever, I refer especially to two of the forms of the disease,—first, the rarely fatal “interstitial catarrhal”

form, and, second, the more serious and rather distinctive "glomerulo-nephritis" form (*nephritis post scarlatinosa*). Another form, called interstitial septic nephritis, is at times found in those cases of scarlet fever which have been complicated by severe diphtheria, abscess, etc., but is not at all characteristic of scarlet fever, as it is also seen in primary idiopathic diphtheria. In "glomerulo-nephritis,"\* which is the condition usually found in fatal cases of scarlet fever nephritis, the kidneys are firm, often hyperæmic, and resemble the cyanotic kidney, except that the glomeruli do not appear red upon section, but gray and anæmic. The alterations in the kidney are almost limited to the glomeruli, which are enlarged and prominent. Their nuclei are enlarged, their coils empty of blood, their walls thickened, and their lumina contracted or obliterated.

Bowman's capsule is only slightly thickened as a rule; sometimes it is proliferated. Accompanying conditions are slight interstitial cell infiltration, fatty degeneration of epithelial cells, and hyaline formation in the arteries.

As I have so often told you, in speaking of other diseases, so I should say in scarlet fever, that, having a fair knowledge of the pathological lesions which occur, or are likely to occur; in the course of the disease, and remembering the important points which I have just spoken of, you can easily deduce the appropriate practical general treatment. By treatment, you must understand, I do not by any means mean simply drug treatment. On the contrary, I would impress upon you that, in my opinion, drugs are employed with entirely too great freedom in a very large proportion of the uncomplicated cases of the benign type of scarlet fever. I feel that I can speak with some authority on this point, as it has been my rule for many years to compare the results of cases treated by my colleagues with drugs with my own cases treated without drugs, and certainly nothing that I have observed in this comparison would indicate that my patients had suffered from want of treatment. We should in our treatment have some definite reason for what we do, and not be influenced by vague

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\* Klebs, "Handbuch der Path. Anat."

ideas of what drugs are supposed to be beneficial in certain diseases. The treatment in a mild case of scarlet fever, of the benign type, is that of—as I have said above—a self-limited disease. The disease cannot with our present knowledge be cut short. We can but keep it within its own limits by avoiding complications; and to do this, we must bear in mind which organs are attacked by the scarlet fever contagium and which are liable to be attacked. In the first class, we essentially must look after the throat and the skin; in the second class, the ear and the kidney. Remember, gentlemen, that I am now speaking of the mild cases, and that complications must receive their appropriate treatment as they arise. The treatment of scarlet fever in my scarlet fever ward is rendered much easier than in private houses, from the fact that I am absolutely free from family prejudice as to how scarlet fever ought to be treated, and also because the patient can at once be placed in a room, where the decks, so to speak, have been cleared and are ready for action. As your cases in practice will be in private houses, it will be better for me to describe the general management and treatment of this class of cases. The disease being eminently contagious, the patient with its nurse should be isolated to as great a degree as the circumstances will permit. An upper room should be chosen by preference. It has been observed, in the crowded parts of large cities, that the cases of scarlet fever in tenement houses are not so liable to spread when the first cases are in the top rooms of the tenement. I have in a number of my cases had one child of a numerous family strictly isolated in the upper story of the house, and the other children remain in the house and never take the disease. The intense degree of the skin lesions involving large surfaces indicates that there should be an equable temperature in the room, in order that the function of the disabled skin should be called upon as little as possible, and that its disabled function should throw as little extra compensatory work as possible on the various internal organs. In like manner a disease which must necessarily enforce confinement to the room for weeks demands a room with good ventilation and sunlight. A room, then, on the sunny side of the house and with an open wood-fire should be chosen, and



the temperature should be kept at about 68° F. The room should be freed from all woollen or cotton material, which cannot be destroyed in the fire at the end of the disease. The blankets, sheets, towels, clothes, etc., can of course be disinfected, but it will save much ultimate trouble and expense to remove the carpet and curtains, replacing them by pieces of carpet and cheap curtains. The pictures, and in fact anything worth preserving, had better be removed. The room can be made cheerful enough by means of cheap colored prints and destructible toys to amuse the child. We have a disease with a hot, dry, often irritable, skin. This skin can from the very beginning of the attack be treated with inunctions of vaseline, which will not only lessen the temperature somewhat, perhaps from one-half to one degree (as I have verified a number of times in the hospital), but will also, by preventing to a certain degree the dissemination of the epidermis in the air, add to the effectiveness of the isolation. The sore throat may for a day or two be a source of discomfort. If the child knows how to gargle, a gargle of ice-water every hour or so will usually be all that will be required. Where unable to gargle, small pieces of ice may be given to hold in the mouth. The chlorate of potash, which is so frequently given for the throat in scarlet fever, is, in my opinion, a drug which, in this disease, it will be wiser not to allow the children to swallow. We should endeavor, of course, to reduce the inflammation in the throat as much as possible so as to avoid the spreading of the process to the naso-pharynx and through the Eustachian tubes to the middle ear, causing an otitis, as I have already told you that the ear was one of the organs which was liable to be affected.

But in warding off danger from the ear we should remember that there is another organ—the kidney—in a condition of such susceptibility to irritation that we should not even run a slight risk of precipitating this irritation. Now, in a large number of cases, no doubt, we would not cause renal irritation by the small doses of chlorate of potash which are usually given, but children differ very much as to their individual susceptibility to drugs, and we can never tell beforehand whether or not we have a child who is liable to be injured by chlorate of potash. We know that the vegetable salts of

potash are decomposed in the system and eliminated as alkaline carbonates, thus becoming comparatively non-irritating to the kidney. The nitrate and chlorate of potassium, on the other hand, which do not part with their oxygen in the system, are excreted undecomposed by the kidney, and thus act as irritants. Knowing that the tendency during the whole course of the disease is towards a renal hyperæmia, we should allow the child to have plenty of water to drink. After the first few days I have the child carefully sponged twice a day with water at 90° F., sponging part of the body at a time, so as to avoid undue surface evaporation, and following the sponging with the vaseline inunction. Unless the child shows decided signs of suffering from high temperature, I do not use antipyretics in the form of drugs by the mouth, as the cases are rare where a temperature of 102° or 103° for a few days will harm the child, and especially in a disease where, if it happens to be a child easily affected by fever, the symptoms will appear at once and can at once be attended to. My opinion is that mere heightening of the temperature without correspondingly severe symptoms causes much needless anxiety. In typical, mild cases of the disease I should also, knowing that a lessening of the amount of urine is, in the prodromal period, an accompaniment of the regular course of the disease, discountenance the administration of diuretics, beyond a plentiful allowance of pure drinking water. I have mentioned before that scarlet fever is rare in the first year of life. There are certain observations which seem to show that nephritis is a rare accompaniment of scarlet fever in the first year. We know that a purely milk diet is one of the best ways of treating renal disease, as milk is the food least irritating to the kidney which we can give. It would therefore seem but rational to make milk the diet in a disease which, like scarlet fever, essentially points out to us, by its pathology, that we should tax the function of the kidney as little as possible and avoid irritating it as much as possible. It may be merely a coincidence, but it seems of some significance that in the first year of life, where the food so universally is milk, should also be the period which is least likely to present scarlatinal nephritis. I am in the habit of putting my scarlet fever patients

on an absolutely milk diet from the beginning to the end of the disease, or at any rate in the first four weeks. It is possible that in this way, in a certain number of cases, the precipitation of a marked nephritis is avoided, while, if it develops, the patient is already on a diet which is best suited to the disease. The patient should be kept in bed until the desquamation is almost over, and confined to the room until the desquamation is entirely over. In the fourth week towards its end the diet can gradually be increased by the addition of soup and bread. It is well to keep the child in the house for five or six weeks, and still longer if the weather is not pleasant. The urine should be frequently tested for albumen (preferably in the sick-room) during the first three weeks, and afterwards, when the child is first allowed to get up, after each change in the diet and after first going out. If albuminuria appear, the child should immediately be put back to bed and on to milk diet until the albuminuria disappears. Remember that these mild cases are the very ones in which a nephritis is liable to occur, and therefore watch them vigilantly until they are out of danger, which is usually in the fifth or sixth week. During the whole sickness the greatest care must be taken to disinfect the linen of both patient and nurse. This should be done by having it soaked for twenty-four hours in a solution of two-per-cent. carbolic acid, then boiled half an hour in water, and finally washed with soft-soap solution (twenty grammes to ten litres). The dejections are to be received in vessels a quarter full of five-per-cent. carbolic acid. After the desquamation has ceased, the child is to be thoroughly washed with either a two-per-cent. solution of carbolic acid or corrosive sublimate (1 to 10,000), and taken to another room to be wiped and put into fresh clothes, which of course have not been in the scarlet fever room. The mattress is to be tied up in a sheet wet with two-per-cent. carbolic acid and sent out of the house to be disinfected, if possible, by steam. I usually advise the family never to have it brought back again. Everything that can be burned excepting the bed and furniture is then burned in the open fireplace.

(To be continued.)



## Foreign Correspondence.

### PARIS LETTER.

(Special Correspondence to the ARCHIVES.)

The Necessity of Analyzing a Nurse's Milk when an Infant wastes away without Visible Cause—The Prophylactic Treatment of Hereditary Tuberculosis—Culture of the Mump Bacillus—Congenital Cataract—When should the Mother and Infant go out—Teratology—Practical Guide to the Weight of Children during the First Two Years—Epidemic of Chaneriform Vaccine—Influence of the Mother subject to Hæmorrhagia over the Vitality of the Fœtus.

*The necessity of analyzing a nurse's milk when an infant wastes away without visible cause* has lately been brought up by Dr. Corbeau. As a rule, when a physician is called in to see a child that is wasting away, his first idea is that the nurse's milk is not sufficient in quantity. Then he weighs the baby before and after it takes the breast, in order to be sure that it has taken a proper quantity of milk; but if the supply furnished by the nurse is sufficient, and yet the child continues to lose in weight, then the *quality* of the milk must be incriminated, in which case no time should be lost in having a chemical analysis of it made. This will often reveal some qualitative alteration of the milk, and it will be necessary to change the nurse no matter how great the quantity of milk she can supply. Corbeau reports a case of this kind. A strong infant was shown to him which had lost two hundred grammes in weight in a few days, and displayed symptoms of general weakening and quite copious vomiting. The doctor was told that the nurse was a strong woman, with a well-developed pair of mammary glands, and that she had been nursing nearly a year, but that the child had developed most satisfactorily until the previous two weeks. The doctor thought the cause might be what is called "*Old Milk*," but this expression by its very vagueness did not improve matters. Furthermore, the nurse protested and called to witness the excellence of the services she had rendered. Two samples of the milk were taken and sent to M. Maquart, who subjected them to a most scrupulous examination, making an analysis by four different

processes, and they all gave identical results: Density, 1030 and 1035; fatty substances normal; caseine, *only very slight traces*. The conclusion to be drawn was self-evident. The nurse was discharged and the child quickly regained its normal health with a new one.

*The prophylactic treatment of hereditary tuberculosis* is the subject of an interesting article by Dr. H. Gillet. Passing over the doctor's arguments proving the facts of hereditary phthisis, we will give his ideas in brief on treatment. Alimentation is of the first importance, and if the baby has a phthisical father, it should be isolated from him. If the mother is healthy, she should nurse the child or engage a healthy wet-nurse, or, if this is not possible, the next best thing would be that the child be allowed to suck the teats of a goat or an ass. This direct method is often used in France, and it is well known that the ass and goat are not often tuberculous. In case of artificial alimentation, great care should be used in selecting the milk of cows, and the indication is given here that cows having a dark coat, and those in pasture, are better than those having white or light-colored coats and kept in stables. If fresh cow's milk cannot be had, then it should be boiled, and during the first two months it should be mixed half and half with boiling water. Tarnier's system of *gavage* and *courage* must be used for delicate infants of this class when born any time before term; another author says to simply pour the milk into one nostril, and child can be fed in this way as well as by *gavage*, which sometimes caused gastric troubles, owing to the irritation of the stomach-tube. It must not be forgotten that the open air is the most precious of all the aliments for such children; and, with proper care, every chance of the child going out must be taken advantage of, well covered with woollen clothes of course. Salt baths should be advised, using one hundred and twenty-five grammes of common salt to twenty quarts of water. The following prescription can be given for baths:

R Sea salt, 100 grammes;  
Ammon. hydrochlor., 25 grammes;  
Ess. thym., gtt. v;  
Water, 20 to 25 quarts.

The child should be put into such a bath for five minutes, at a temperature equal to that of the room, and rubbed briskly afterwards. In some cases thirty grammes of potassium sulphate may be added to the warm water; or the natural sulphur waters may be recommended both in baths as a drink and in inhalation. Sea baths are to be advised with caution, and stopped the moment there is the slightest bronchial trouble. As to medication, the best are iodides, arsenic, cod-liver oil, phosphate of lime, and tannin. The following formula are given: Potassium iodide, 1 gramme; tincture of iodine, 1 gramme; antiscorbutic syrup (French) and cinchona syrup, of each 125 grammes. Teaspoonful dose according to age. Or, iodide of sodium, 2 grammes; glycerin and bitter orange-peel syrup, of each 50 grammes. A dessertspoonful of this per day is enough for a child of three years of age. Arsenic is not given before the child is three or four years of age, and then in half-drop doses. Cod-liver oil may be commenced as soon as the baby has done nursing, and the phosphate and tannin is best given in jelly or preserves. In one word, the medication is to be subordinate to the hygienic methods; but with both, it is possible to bring up these children to a useful life.

*Culture of the mump bacillus.*—M. Bordas gives the Société de Biologie his experiments, which prove that a micro-organism, that he calls "*bacillus parotidis*," is developed in blood coming from a patient that had mumps in eight hours. In certain phases of their development they take the form of an S or a V, when they are divided; sometimes they are enlarged on the ends. This bacillus dies at 60° C., but its spores only succumb at 90°. Corrosive sublimate (1 to 500,000) put into the culture soup prevents their development. A culture made with saliva was extremely rich in the micro-organism, and makes the author think that the saliva is the real agent of contagion, and that cynanche parotidæa follows a deposit of the spores in Steno's duct, where they increase very rapidly.

*Congenital cataract.*—Professor Gayet (of Lyons) was recently consulted for a child born with a cataract. This is the only case of the kind noted up to now, and is explained in this way: It is supposed that in the course of its development that



the nucleus of the crystalline lens became opaque, and after the cause of this disorder had ceased to act, the normal development once more resumed its course, and the primitive crystalline nucleus which had become opaque was surrounded by new layers of transparent crystalline fibres, so that this congenital cataract presents this peculiarity: it is formed of an opaque nucleus surrounded by a transparent capsule. The case is a mere curiosity; but it is well that it should be recorded, as it is the only one that has ever been published up to the present.

*When should the baby and mother go out?*—The principal French accoucheurs of the present day answer this question. As to the mother, she should not rise from bed until the uterus has again become a pelvic organ, which takes place only from the eighteenth to the twenty-fifth day after confinement; and a mother should not go out of the house until the end of the fourth week or the fifth. As to the baby, it should not go out until the cicatrization of the umbilicus is perfect, say the tenth day in summer-time, and in winter-time not until the fifteenth to the thirtieth day, and then when the temperature is at least 50° F.

*Teratology.*—Dr. Gueniot has lately presented to the Academy of Medicine a child of eight days of age, whose cranium appears in a bony case entirely closed, and therefore inextensible. This infant has all the characteristics of a microcephalous child. The fontanelles and the cranial sutures are not perceptible at any point, and where the posterior opening should be the finger even meets a bony excrescence. The baby weighs 2700 grammes (about six pounds), and has not lost weight since birth. There is therefore every reason to believe that it will live for a certain time, but experience shows us that the intellect does not develop in such children. They have rarely ever any speech sounds, only a sort of grunt, like an animal.

*Practical guide to the weight of children during the first two years.*—Dr. Sutis has just published a little book that gives some interesting tables on the variation of weight according to the form of alimentation used. The author gives a mass of information, but the most important is the increase of weight during the *first* and *second* years taken from a large number of

cases, and it is thought to be very exact by our local accouchers. The first year's proper increase is usually given in many works, but this is the first time that the increase of the second year has been determined, and should serve as a guide to physicians, so we append the tables. Weights in French grammes and kilos.

Increase in	1st month, 750 gr.	Weight end of	1st month, 3 kil. 750
"	2d " 700 "	" "	2d " 4 " 450
"	3d " 650 "	" "	3d " 5 " 100
"	4th " 600 "	" "	4th " 5 " 700
"	5th " 550 "	" "	5th " 6 " 250
"	6th " 500 "	" "	6th " 6 " 750
"	7th " 450 "	" "	7th " 7 " 200
"	8th " 400 "	" "	8th " 7 " 600
"	9th " 400 "	" "	9th " 8 " 000
"	10th " 350 "	" "	10th " 8 " 350
"	11th " 350 "	" "	11th " 8 " 700
"	12th " 300 "	" "	12th " 9 " 000

Increase in	1st month, 000 gr.	Weight end of	1st month, 9 kil. 300
"	2d " 250 "	" "	2d " 9 " 550
"	3d " 250 "	" "	3d " 9 " 805
"	4th " 250 "	" "	4th " 10 " 000
"	5th " 250 "	" "	5th " 10 " 300
"	6th " 200 "	" "	6th " 10 " 500
"	7th " 200 "	" "	7th " 10 " 700
"	8th " 200 "	" "	8th " 10 " 900
"	9th " 200 "	" "	9th " 11 " 100
"	10th " 150 "	" "	10th " 11 " 250
"	11th " 150 "	" "	11th " 11 " 400
"	12th " 150 "	" "	12th " 11 " 550

Weight end of 2d year, 11 " 550

*Epidemic of chaneriform vaccine.*—A very curious epidemic of vaccine of an ecthymato-ulcerous nature took place at a small place called *Motte Sous Bois*, in the North of France, lately. A large number of children had been vaccinated from a child, and soon afterwards they presented certain ulcerations of a herpetic nature, on the arm vaccinated, as large as a ten-cent piece,—nearly forty children were affected. With this the arm was swollen and cedematous, and the suppuration was abundant; some of these ulcers got as large as a half-dollar piece, and were pronounced to be syphilitic by some of the observers. Professor Leloir, however, insisted on waiting to

see if there would be secondary symptoms, and after three months all healed up without the slightest signs of secondary syphilis; and the professor was able to read a lesson to the too rapid diagnosticians who pronounced it syphilis, which from vaccination should never be pronounced until the secondary symptoms come on.

MM. Charpentier and Butte presented some interesting studies on the question of the influence of the mother over the vitality of the foetus when she is subject to hæmorrhagia. After a number of experiments of pregnant rabbits which, when bled, were found to destroy their progeny rapidly, it was concluded that the death is owing to the fact that there is a loss of a part of the oxygen in the mother's blood, owing to the diminution of the total oxyhæmoglobin and also in the diminution of the blood-pressure, which prevents the oxygen going to the foetal tissues, as it slows up the circulation. The death of the foetus is seen to take place when the mothers are not in danger, and clinical facts are not wanting where mothers have had epistaxis and other hæmorrhagias and afterwards give birth to dead and macerated foetus. The indication would seem to be in cases of considerable hemorrhage in a late period of pregnancy to provoke an artificial confinement, to try and save the life of the child, which is certainly menaced whenever a mother is subject to hemorrhage.

## NEW YORK ACADEMY OF MEDICINE.

### SECTION ON PEDIATRICS.

*Stated Meeting, November 14, 1889.*

Dr. J. Lewis Smith, *Chairman*; Dr. Aug. Caillé, *Secretary*.

#### EMPHYSEMA.

DR. KOPLIK exhibited a boy, six years old, who was subject to attacks of dyspnœa and cough which lasted from three to four days. There was marked tympanitic resonance of the chest



with sibilant and subcrepitant râles. The expiratory murmur was prolonged, and a loud wheezing sound could be heard. There was a general heaving motion of the chest, and the intercostal spaces were drawn in with each inspiration. Another feature of the case was the presence of the cardiac impulse on the right side, being most distinct at a point half way between the right nipple and the sternum. The heart dulness was on the right side, and began above, at the third rib, and extended below to the liver dulness. Dr. Koplik also exhibited an hysterical boy, eleven years old, who began to open and close his jaws automatically three days after the withdrawal of a lower molar tooth. At first his lips began to twitch, and in a few minutes his lower jaw was depressed, and then pushed up and forward, at short intervals, with a snapping noise. He has also an aortic systolic murmur.

DR. F. HUBER exhibited a case of

#### DOUBLE EMPYEMA,

which he had operated upon five months ago. A detailed history of this case appeared in the *ARCHIVES* for November, 1889. The right pleural cavity was opened on June 7, and the opening was completely closed in fifty-seven days. The left pleural cavity was opened on June 17 (ten days later), and the opening was completely closed in sixty-seven days. Dr. Huber said that the case was presented to show the rapid recovery of an aggravated case under simple incision and drainage with antiseptic precautions. Irrigation was employed at the onset as long as masses of lymph were discovered in the discharges. The dressing was changed only every few days. As could be seen, there was little or no retraction of the chest-walls. The lungs were not at all crippled, but expanded thoroughly. The general condition of the boy was excellent.

DR. W. L. CARR exhibited a case of

#### EMPYEMA,

which had been operated upon two months previously. The pus was in the right pleural cavity. No irrigation was used. The child made an uninterrupted recovery, and the drainage-tube was removed in eight days.

DR. MARY PUTNAM-JACOBI read a paper on the

“TREATMENT OF EMPYEMA,”

an abstract of which will appear in a later number of the ARCHIVES.

In the discussion which followed

DR. BARUCH spoke of some of the objections to irrigation of the pleural cavity after an operation for empyema.

DR. HUBER, who had operated upon thirty cases, used irrigation chiefly to remove large masses of lymph, and, in his more recent cases, employed this method less and less. He had never used the valve principle in the arrangement of the tube and dressing, but he thought well of it, and intended to try it in his future cases.

DR. CAILLÉ said that as Dr. Jacobi's communication dealt also with the different methods of evacuating the pus in pyothorax, he would call attention to a method which was original with Dr. Krieger, and published in No. 10 of the *Deutsche Medizinische Wochenschrift*, 1889. Thorough irrigation of the thorax, without the admission of air, is secured in the following manner: A metallic T canula and trocar combined is pushed through the intercostal space. A rubber tube leading from an elevated bottle, containing a warm antiseptic solution, is attached to one shank of the canula, and a second tube to the other shank of the canula (outlet). As soon as the stylet of the trocar is withdrawn, and the compression-clamps are opened, a rhythmic self-irrigation takes place, and a steady and continuous flow of liquid is established.

Dr. Caillé said that he had personally tried this method in an adult, who had contracted bilateral pyothorax after typhoid fever. The patient made a good recovery. In children this method of irrigation cannot be employed, on account of the difficulty of keeping the tube *in situ*.

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## Current Literature.

### I.—HYGIENE AND THERAPEUTICS.

Chapman, S. H. : Notes on the Prevalence of Diphtheria at High Altitudes. (*Med. News*, 1889, lv. 345.)

From a study of an epidemic in Eastern Austrian Tyrol Dr. Chapman drew the following conclusions: 1. That the latent germ was stimulated into active development in the steaming, fermented, fevered atmosphere of the stable. 2. That its virulence was rather increased than diminished by the high altitude, and by the rarity and low temperature of the air. 3. That propagation from house to house was not hindered by the passage of the germ through a rarefied air of very low temperature. 4. That the impulse of the germ became less and less violent, as time elapsed after its first appearance. 5. That the history of this epidemic seems to show that there took place a special culture of the specific microbe, in definite quantity; that all the cases were attacked by the originally developed microbe; but that, under the wearing action of time and atmospheric conditions, its virulence became more and more attenuated until it again passed into a harmless period of existence, or became scattered in localities unpropitious for further development.

Ernst, H. C. : How far may a Cow be Tuberculous before her Milk becomes Dangerous as an Article of Food? (*Amer. Journ. Med. Sc.*, 1889, xcvi. 439.)

His preliminary work shows: First and emphatically, that the milk from cows affected with tuberculosis in any part of the body may contain the virus of the disease. 2. That the virus is present whether there is disease of the udder or not. 3. That there is no ground for the assertion that there must be a lesion of the udder before the milk can contain the infection of tuberculosis. 4. That, on the contrary, the bacilli of tuberculosis are present and active, in a very large proportion of cases, in the milk of cows affected with tuberculosis, but with no discoverable lesion of the udder.

Sawyer, A. : A Case of Nutmeg-Poisoning. (*New York Med. Journ.*, 1889, l. 354.)

A boy, three years old, had taken five large nutmegs, which, he said, was his tobacco, and which by noon he had managed to



consume, presumably spitting out the bulk of the spice. At 2 P.M. he complained of feeling dizzy and soon fell asleep, and they had been unable to arouse him. He had had one movement from the bowels, and had urinated twice while in this condition. There had been no delirium. The temperature and respiration were normal. The pulse was a little slow. All the muscles were completely relaxed and the pupils were dilated. He recovered consciousness as if awakening from a natural slumber, after having slept thirty consecutive hours.

Hare, H. A.: *Strophanthus in the Treatment of Cardiac Disease in Children*. (*University Med. Mag.*, 1889, i. 342.)

Dr. Hare has reached the conclusion that digitalis gives relief to patients under the age of twelve years in a much smaller proportion of cases than it does in adults, and that though the stomach is no more frequently disordered, increased dyspnoea, nervous irritability, and cyanosis often follow its use. On the other hand, strophanthus acts exceedingly well in the instances in which digitalis fails. The author supported this view by giving the details of two cases. In one case, aged eight, he gave two drops of the tincture of strophanthus every five hours, and in the other case, aged five, two drops three times a day.

Love, I. N.: *Sleep and Rest from a Pediatric Stand-Point*. (*New England Med. Month.*, 1889, viii. 401.)

Dr. Love makes the following points: 1. Rest and sleep, coupled with activity of the secretory system of glands in the new-born infant, are most favorable to growth and development, and put it in a condition antagonistic to disease, in that the nervous system is in the best possible shape. 2. Rest, sleep, and glandular activity are the best accompaniments of any disease to which the child of any age is liable. 3. Repair rather than waste is favored by the securement of a tranquil state of the nerves, and this, together with the open condition of the eliminative organs, favors not only the carrying away of the results of disease, but encourages assimilation of the reparative matter.

Mulhall, J. C.: *Local Treatment of Diphtheria*. (*New York Med. Journ.*, 1889, i. 319.)

When the writer originated his plan of treatment, he took for granted the following propositions: 1. That the disease is a germ-disease. 2. That in the vast majority of cases the specific microbe selected the tonsils as their initial culture soil. 3. That, unless checked by germicides, their colonization usually

resulted in local putrefactive changes with general secondary septicæmia. 4. That implication of the laryngeal or nasal chambers largely increased the mortality. 5. That the disease is acutely adynamic. His treatment consists in flushing out the pharynx with an antiseptic mixture of carbolic acid and compound solution of iodine properly diluted with warm water, which frequently, in addition, is saturated with boric acid. This is done, while the child lies on its side in a crib, with the common household syringe, every hour in the waking state, and the child is never permitted to sleep three hours without it. For prophylactic treatment of the nasal cavities, he uses finely-powdered sulphur or iodoform or salicylic acid highly diluted with a trifle of cocaine, to prevent irritation. As a solvent he has had the best success with papoid. In laryngeal diphtheria, he uses the fumes of slaking lime or the vapor from boiling water which contains pine-tar and oil of turpentine.

**Lindley: Iodoform in Diphtheria.** (*Boston Med. and Surg. Journ.*, 1889, cxxi. 252.)

Dr. Lindley recommends the use of iodoform because,—  
 1. It prevents the multiplication of bacteria. 2. It is a soothing local anodyne. 3. It is like alcohol, in having no toxic dose where the patient is suffering from the diphtheritic poison. 4. It is so nearly impalpable that it reaches all portions of the diseased surface. 5. It adheres for a long time to the surface where it is applied, and thus has excellent local effect before it is absorbed. 6. It does not cause nausea and thus interfere with nutrition. 7. It does not produce diarrhœa or salivation, as is possible from an overdose of the bichloride. 8. It is quickly and easily applied.

**Cheatle: The After-Treatment of Tracheotomy in Diphtheria.** (*Gaillard's Med. Month.*, 1889, xlix. 175.)

Dr. Cheatle gives the details of five cases with two recoveries. All these cases were given sulphate of quinine, bromide of potassium, and sal volatile as constitutional treatment. The insertion of feathers to keep the tube and trachea clear was totally abolished; and this end was attained by keeping the air warm and moist, catching the expectorated matter by the nurse to prevent inspiratory effort sucking it back again, occasionally washing the inner tube, and finally dropping down the tube every half-hour a few drops of a warmed solution of bicarbonate of soda. The time for removing the tube with safety depends upon the amount of air which passes through the larynx, and the writer judged of this by placing a piece of cotton fibre in front of the nostrils.

De Armond: The Need of Nourishment in Diphtheria. (*Weekly Med. Rev.*, 1889, xx. 324.)

Knowing that it is a self-limited disease, the writer claims that the indication of primary importance in the treatment of diphtheria is to feed the patient, and that every other line of treatment should be made secondary to this. He is satisfied that if nourishment were given with the same free hand that many drugs of doubtful utility are handed out there would not be such an urgent need even of stimulants.

Davis: An Open Safety-Pin swallowed by an Infant of Eight Months. (*N. W. Lancet*, 1889, ix. 270.)

It measured an inch and an eighth in length and spread nearly an inch. It was a plain brass pin and held open by a stiff spring. It was passed *per anus* after thirty-seven days, and had become but slightly corroded.

Douglas: Sexual Precocity. (*New York Medical Journ.*, 1889, l. 432.)

The writer reports the case of a boy, four years and three months old. The penis, scrotum, and testes are of the size of those of an ordinary adult, the penis measuring full three inches in the placid state; the prepuce rests half retracted over the glans. The pubes is covered with soft, silky, brown hair. He does not appear to manifest any fondness for the opposite sex, and yet is addicted to masturbation. His erections are vigorous. The emission does not contain spermatozoa. The boy was not in any way unlike other children up to three years of age, at which time, after wading in a spring branch for several hours, he was seized with a violent chill, followed by extremely high temperature and active delirium. He was quite well again in four days. Some few weeks after this the mother noticed the change in his voice, and the gradual development of the sexual organs followed. It was first noticed that he masturbated some six months ago. A probable solution of the case is that during the short but severe fever the brain sustained some positive organic lesion which has since acted as an irritant to the sexual nerve-centres.

Jagoe: A Case of Precocious Menstruation. (*New York Medical Journ.*, 1889, l. 433.)

Dr. Jagoe reports the case of a well-grown negro girl, not yet four years old, who has been menstruating for over two years. The child is intelligent for her age, breasts fully developed, pubes wearing the adult garb, and a regular menstrual discharge, which is normal as to time, quantity, and material.



Lawrence: Diphtheria conveyed by Cats. (*Med. Age*, 1889, vii. 393.)

The writer reports two cases. Upon careful inquiry it was found that the first case had not been exposed to the disease, although there were some cases within a mile of her father's house. He incidentally learned that there was a sick cat in the house, which had been fondled by the little girl some days before. The cat died shortly after its playmate became sick, and a second cat also became sick and was killed. An investigation revealed the fact that one neighbor farmer had lost seventeen cats and another fifteen with some throat-trouble. One of the farmers stated that he had examined the throats of some of the cats and found them covered with a white membrane. Cats are disposed to run from house to house, and one diseased cat may be the means of carrying diphtheria to many children, whom the parents are taking every means to protect from danger.

Scott: Diphtheria from Cats. (*Med. Age*, 1889, vii. 463.)

Four most malignant cases occurred in one family. A kitten came to the house a few days before the disease manifested itself and was fondled by the children. Through accident the mother discovered the mouth and throat of the feline were infested with false membrane, and therefore caused it to be killed; but too late to save herself and three little girls from infection.

## II.—MEDICINE.

Read, H. N.: Typhoid Fever in Children. (*Brooklyn Med. Journ.*, 1889, iii. 598.)

The writer reports twenty-two cases and draws the following conclusions from them: 1. Typhoid fever attacks young children only about one-third or one-fourth as often as it does adults. 2. As far as is known, it attacks boys more frequently than girls. 3. The prognosis is better in children than in grown people. 4. The treatment best adapted for typhoid fever in children is that which keeps the temperature within reasonable limits and supports the strength of the patient. The more powerful depressants, aconite, veratrum viride, gelsemium, etc., are contraindicated. The ordinary diffusible stimulants, ammonia, nitrous ether, etc., and the usual heart-tonics, quinine, digitalis, etc., are not needed, and therefore may do harm. The best febrifuge is sponging with cool water, assisted, when the fever rises to 104°, by antipyrin or phenacetin. Alcohol, in some of its various forms, is the best stimulant. Milk is the best diet.

Kilham, E. B.: An Epidemic of Pemphigus Neonatorum. (*Amer. Journ. Obstet.*, 1889, xxii. 1039.)

This occurred at the New York Infirmary for Women and Children. The house was reopened last autumn, and of eleven children which were born during the following month, all but three developed pemphigus. The course of the disease was about the same as in all cases, appearing on the third or fourth day after birth, in one case on the second day. The vesicles developed rapidly, were in shape round or oval, from the size of a pin-head to that of a dime, and situated on a reddish base. The contents, at first clear, became purulent on the second day. When undisturbed, the fluid was reabsorbed; but oftener the vesicles were opened by friction. The epidermis dried quickly. The fluid was alkaline in reaction, and by the microscope showed blood-cells and pus-corpuscles. A careful examination was made for bacilli, but with negative results. The disease ran its course in from one to three weeks, and seemed to be a purely local process. All parts of the body, with the exception of the soles of the feet and the palms of the hands, were affected. In this particular the disease presented a marked contrast to the ordinary syphilitic pemphigus, in which the hands and feet are first affected. One infant, isolated, escaped, and another, also isolated, escaped with a single bleb. Two who were exposed manifested no trace of the disorder. A similar outbreak occurred at the Infirmary two years ago, in which six children only were affected, and to a much less extent.

Prior, J. H.: A Case of Malformation of the Heart. (*Med. Press*, Buffalo, 1889, iv. 184.)

The patient was a boy, aged six and a half years. There was dyspnoea with cyanosis after exertion. There was a marked thrill over the chest-wall, and a strong pulsation of the carotids. The apex-beat was in the sixth intercostal space, somewhat to the right. First sound clear, but second sound almost entirely muffled by an intense, high-pitched murmur, which was mostly systolic, but also diastolic. The sound was localized at the aortic orifice, and was audible, both anteriorly and posteriorly, over the whole chest. Pulmonary second sound absent, or inaudible, on account of the loud murmur. Fingers clubbed. In addition to the heart symptoms, there was evidence of cerebral mischief. *Autopsy*: Brain oedematous. Left lateral ventricle slightly distended with fluid. Encysted abscess of right hemisphere, frontal lobe, involving white matter, containing about two ounces of fetid pus. The left ventricle greatly hypertrophied, and the right ventricle hypertrophied

and dilated. Tricuspid valves insufficient. Near the interventricular septum a large pouch, partially separated from the rest of the ventricle by large columns of muscle. Interventricular septum incomplete at "undefended" parts. Pulmonary artery absent. Right and left ventricles both open into the aorta, which is pouched near the heart and enlarged. Aortic valves complete. The opening made by incomplete septum is large enough to admit an ordinary-sized little finger. On the free surface appeared a small, imperfect, rudimentary valve leaflet. Auricles normal. Foramen ovale closed.

Hirst, B. C.: Intracranial Hemorrhage in New-Born Infants. (*University Med. Mag.*, 1889, i. 344.)

The writer gives the history of two cases, with the appearances at the post-mortem examination. In the first case, which was delivered by the breech, he thought that, during the extraction of the child's head, the effusion occurred into the cranial cavity by exudation. In the second case, which was a vertex presentation, there was an interval of fifteen minutes between the birth of the head and the expulsion of the body; and the only explanation he could give of the origin of this hemorrhage was that it was due to the long-continued constriction of the foetal neck, and consequent passive congestion of the brain.

Büchler, A. F.: A Fatal Case of Varicella Gangrænosæ. (*Amer. Journ. Med. Sc.*, 1889, xcvi. 265.)

Three other children in the same family were attacked with varicella, which ran a mild course. A fourth child, a female, aged four years, was attacked by varicella, a number of the vesicles became gangrenous, and the child died on the ninth day with symptoms of septicæmia.

Da Costa, J. M.: Diabetes Insipidus cured by Ergot. (*Med. News*, 1889, lv. 347.)

Dr. Da Costa gave to a boy, aged seven, one-half fluidrachm of the extract of ergot three times a day. Caution the patient to drink as little as possible. Regulate but do not restrict the diet. The patient made an entire recovery.

Wendt, E. C.: Advanced Pyelo-Nephritis in an Infant. (*Amer. Journ. Obstet.*, 1889, xxii. 709.)

The patient was a female, aged two years, and the diagnosis of kidney-disease was not made during the lifetime of the patient. The left kidney was small and flat, and the capsule was adherent in places. It was lobulated. On section, turbid urine mixed with pus and mucus flowed out. The renal pelvis



was much distended, and the calyces were converted into a series of large and deep inter-communicating pockets. But little remained of the proper structure of the kidney. The right kidney was about twice the size of the left one. The surface was also lobulated, but the capsule was less firmly adherent. The pelvis was enormously distended, and a series of pouches extended deeply into the renal substance. Both ureters were enlarged and thickened. The bladder was very much enlarged and its walls greatly hypertrophied. At the neck of the bladder this hypertrophy was so enormous as to suggest the presence of a neoplasm. The urethra was narrow, but quite pervious. No congenital malformation was found. The writer said that perhaps the hypertrophy of the bladder should be regarded an idiopathic one in the absence of a demonstrable exciting cause. The pyelitis and pyelo-nephritis would then be secondary to the vesical trouble, and, looked at in this way, the case is not entirely unintelligible.

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### III.—SURGERY.

Ayres: Paracentesis in Internal Hydrocephalus. (*Amer. Lancet*, Detroit, 1889, xiii. 128.)

The author exhibited a case of acquired chronic internal hydrocephalus, for the relief of which he undertook paracentesis after trephining. The patient was a boy nearly five years old. He was seized with convulsions when three months old, and these attacks, which became very frequent, continued for nine months and then ceased. Three months after their commencement his head became enlarged. Every form of treatment had been tried, but without the least success. Condition at the time of operation as follows: He was obviously imbecile. He could not talk, but smiled idiotically. He was totally blind, but the other special senses were not apparently affected. He had never walked or stood alone, but could easily move his body and extremities. His bowel and bladder sphincters were not controlled. He was extremely irritable and restless. He was fairly developed physically, but always of an ashy pallor. There was a very frequent rotary movement of the head, with slight retraction and grinding of the teeth. The anterior fontanelle closed when he was eighteen months old, and the sutures had ossified at the usual time. The measurements of the head gave twelve and one-half inches from the glabella to inion; thirteen and three-quarters inches over the biauricular line; twenty inches around the fronto-occipital line. On the 4th of December, 1888, the author

operated upon the case. Under the most careful antiseptic precautions, with a trephine about one centimetre in diameter, a button of bone was removed from over the coronal suture, about one and one-half inches to the right of the median line. A very delicate trocar was passed through the dural membrane into the brain-substance, downward, backward, and inward, to the depth of two and one-half inches, the object being to pierce the central cavity of the right lateral ventricle. About an ounce of a clear, limpid fluid, closely resembling cerebro-spinal fluid, was evacuated, and, as the trocar was withdrawn, a small quantity of the same kind of fluid escaped from the subdural space. For several days the same fluid continued to ooze from the puncture in the dura, and it was estimated that from four to eight ounces was thus discharged.

The case progressed satisfactorily. In two or three days he could stand alone, and he was gradually able to walk alone across the room, which he did in about three weeks. There was a partial restoration of the sight. He became more attentive and seemed to understand better. He was less irritable and he slept well. The rotary movements of the head ceased. However, there was no development of speech, nor were the sphincters under any better control. The author believes that more fluid will have to be evacuated, as the patient is not quite so active now as some time after the tapping.

The chief difficulty lies in our inability to determine which cavity to evacuate. For instance, if the fluid resides in both cavities, and the normal openings between them, through the foramen of Majendie, and those behind the roots of the glosso-pharyngeal nerves be closed by inflammatory exudation, or the presence of a tumor, then to tap only the subdural space would remove the external pressure, and allow such an expansion of the internal fluid as would perhaps lacerate the brain-tissue. Or the same effect might be produced by evacuating only the ventricular fluid. This may have been the cause of death in some of the reported cases.

Miller, K.: *Hernia in Young Children.* (*New Orleans Med. and Surg. Journ.*, 1889, xvii. 241.)

Among the causes of this condition, he refers to the habit of firmly rubbing the scar left by the newly-fallen cord at every dressing of the navel, the wearing of a very tight abdominal bandage, constipation, violent coughing, and other similar causes. He treats umbilical hernia by a modification of the abdominal pad and bandage, using an old fashioned button mould, which is covered with muslin and sewed to

three strips of adhesive plaster. In the treatment of inguinal hernia, he advocates a method suggested by Pye, as follows: "A skein of worsted was used, which, stretched out straight, should be twenty-two inches long. The thread should be tied across at intervals of about two or three inches, to keep them together. One end of the skein was placed over the abdominal rings and the folded worsted is passed horizontally across the abdomen, over the line of the crest of the pelvis to the opposite side, around the hips, behind the pelvis, and over the hip on the side of the hernia. The end is then passed through the loop of the skein and will here form a knot, the bulging portion of which must be carefully adjusted so as to lie against the hernial opening, and being carried down to the upper part of the thigh, it is then brought around the external side near the great trochanter, and then tied or fastened with a safety pin." The writer reports several cases with good results.

Sutton, J. B.: Imperforate Ileum. (*Amer. Journ. Med. Sci.*, 1889, xcvi. 457.)

Dr. Sutton reports the case of a baby forty-eight hours old, with the following history: The abdomen was found distended shortly after birth, and the baby commenced to vomit its food. On examining the anus, the parts were found quite normal, and a catheter could be passed readily into the bowel for many inches. Nothing but mucus passed by the anus. It was clear that we had not to deal either with imperforate anus, rectum, or pharynx, as the infant could swallow easily, and as it retained milk for a time, imperforate duodenum was excluded. I therefore came to the conclusion that we had to deal with an imperforate ileum. At the request of the parents, I explored the abdomen, and found the ileum imperforate at a spot about eighteen inches from the ileo-cæcal valve. The distal end of the ileum was somewhat shrunken, and separated from the proximal end by a gap an inch across. The upper cul-de-sac was dilated with meconium and congested; this was removed and the end of the gut stitched to the abdominal wound. Meconium and flatus passed freely, the child rallied and took food, and the case promised to get well, but about six hours later it suddenly expired.

Hamaker, W. D.: Ovarian Tumor in a Girl Seven Years Old. (*New York Med. Journ.*, 1889, l. 288.)

Nine months before the tumor was removed she began to fail gradually in health, with pain in the left side, and a slight tendency to bend forward in walking. Four months later the parents first noticed the abdominal enlargement. At the first



visit, two months before the operation, she was anæmic and emaciated, and was unable to lie down on account of dyspnœa and pain just below the region of the liver. The tumor could not be made out until after the aspiration of six pints of dark ovarian-like liquid, when it could be distinctly felt, about the size of a child's head, and apparently growing from the *left* ovarian region. Ovariectomy was performed with strict antiseptic precautions, the tumor was removed without difficulty, and the patient made a good recovery. There were found one large cyst and several "daughter" cysts, and the tumor was attached by means of a long pedicle to the *right* ovary.

**The Radical Treatment of Spina Bifida.** (*Journ. Amer. Med. Assoc.* [Editorial], 1889, xiii. 639.)

The writer thought that the testimony of recent operators seemed to indicate three pretty clearly defined facts: (1) That the escape of a considerable quantity of fluid from the sac is not necessarily attended by dangerous sequelæ; (2) That there is less danger from injury to the nerve-structures than has been believed; and, (3) That many of the unfavorable results of former operations were, doubtless, due to lack of proper precautions relative to the prevention of sepsis.

**Vander Veer, A.: Congenital Sinus of the Urachus.** (*Amer. Journ. Obstet.*, 1889, xxii. 1082.)

Miss H. N., aged twenty, had suffered from birth, at irregular intervals, from profuse, offensive discharge from umbilicus, accompanied by sickening sensation, so that weight of clothing was painful and all active exercise precluded. Excretions from parts above navel were at times sebaceous in character, very offensive, and excoriated the parts somewhat. A probe passed into a sinus three inches towards superior fundus of bladder. The sinus was thoroughly opened up and curetted. The lower portion was closed with sutures, and the upper part dressed with iodoform gauze, and allowed to granulate. Union was perfected, and followed by complete recovery of patient from all previous trouble.

**Ryan: The Orthopedics of Infantile Paralysis.** (*Amer. Pract. and News*, 1889, viii. 257.)

Dr. Ryan sums up as follows: 1. That orthopedic treatment, in conjunction with local treatment of muscles, is useful in all children who have arrived at the walking age, by reason of the support it gives, and that it prevents deformity. 2. That it tends to preserve in a measure the proper balance between antagonistic groups of muscles, in that it aids the

weakened group and restrains the normal one. 3. That by this means it gives the paralytic group the benefit of any movement they may be capable of, and in this way they can get exercise. 4. That it certainly can correct deformity. 5. That a heavy appliance, or one adjusted by lacing bands to the leg or thigh, does more harm than good. 6. That such measures are a necessity in the after-treatment of divided muscle or tendon. 7. That in most contractions it is better to divide than to stretch them.

**Seibert:** The Surgical Treatment of Erysipelas in Children. (*New York Med. Journ.*, 1889, l. 430.)

The author reported three cases in which he used a modification of the Riedel-Kraske method with marked success. His modification was to make the bloody fence with a vaccination-harrow and without an anæsthetic. The operation is done as follows: After carefully cleansing the skin with soap, water, ether, and a five-per-cent. solution of carbolic acid, and covering the erysipelatous region with a carbolized towel, a bloody fence is made with long strokes of the harrow to the width of about an inch, and about an inch and a half away from the erysipelas. These scratches (which are all deep enough to draw blood) are carefully but quickly crossed diagonally with manifold strokes of the harrow, so as to be sure that all the surface operated upon is open. A solution of corrosive sublimate (1 to 2000) is then rubbed into the wound, and a layer of absorbent cotton applied and fastened with gauze bandages. This dressing is moistened freely with the same solution every fifteen minutes.

The writer said that he was positive that this method would check and cure every case of erysipelas if employed in time.

**Johnston:** Intubation for Diphtheritic Laryngitis. (*Cincinnati Lancet-Clinic*, 1889, lxii. 435.)

The writer gives the details of eight cases with five recoveries. He also gave the results of four operators in Cincinnati who had collectively seventy-seven cases with a general average of forty per cent. recoveries.

**Albertson:** A Case of Congenital Occlusion of the Bowel. (*University Med. Mag.*, 1889, i. 293.)

At birth it was deeply jaundiced, and although it had a dejection every day, it was very small in amount. It was unduly stupid, although it nursed well. On the fourth day it began to vomit, which soon became excessive. On the seventh day, after a copious passage, which the nurse con-

sidered entirely natural, it began to fail rapidly and died the same evening. *Autopsy*: Beginning at the pyloric extremity of the duodenum, and extending a distance of two inches, was a dilatation of the bowel, having a shape almost exactly like that of the stomach, with about three-fourths its capacity. This dilatation ended in a cul-de-sac, having no communication whatever with the intestine below. The bile-duct probably emptied into the dilated portion above the obstruction.

Pershing, H.: Acute Infantile Spinal Paralysis. (*Denver Med. Times*, 1889, ix. 91.)

The treatment in the first stage should be purgative, diuretic, and diaphoretic. The patient should lie in the prone position, and prompt blistering over the spine should be effected. Dr. Pershing thought that this treatment, followed by poultices, was more efficient than the application of ice. At the end of three or four weeks, he advised galvanism and massage for the paralyzed muscles and systematic movement of the joints. The sound muscles should be put on the stretch to prevent contraction and the resulting deformity. It is of great importance to encourage voluntary motion, and properly adjusted orthopedic appliances will often permit an amount of wholesome exercise of the weak muscles that would be impossible without them.

Winter, J. T.: A Case of Absence of the Bladder. (*Amer. Journ. Obstet.*, 1889, xxiii. 374.)

The meatus urinarius, vestibule, and labia minora are entirely absent. The labia majora are imperfectly formed, consisting simply of little folds of skin about one inch long, about an inch and a half apart posteriorly, and about two inches apart anteriorly. The ureters discharge externally, just inside of the anterior edge of these little folds of skin, nearly two inches apart. The pubis is considerably depressed, and has a soft feel as if it might be cartilaginous. There has always been a constant dribbling of urine. She is now eight years old.

Goldthwait, J. E.: A Case in which the Night-Cries of Hip-Disease were stopped by Flexing the Leg. (*Boston Med. and Surg. Journ.*, 1889, cxxi. 280.)

Increased extension, weight, and salicylate of soda having failed, the leg was flexed at an angle of about thirty degrees with the bed, and the weight raised to pull in the same direction. That night she cried out once, and upon the six following nights she slept soundly all night.



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(Continued from p. 128.)

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ANEURISM IN EARLY LIFE.\*

BY A. JACOBI, M.D.,  
New York.

THE following history of *aneurism of the abdominal aorta*, occurring in a girl of five years, was furnished me by Charles F. C. Lehlbach, M.D., of Newark, N.J. I cannot do better than copy it in full in his own words :

"The patient from whom the specimen was taken died in Dr. E. J. Ill's private hospital, at Newark, N.J., July 8, 1887, of acute tubercular meningitis, at the age of five years and three months.

"*Parental history*.—Her parents were both dead. Her mother had died, October 13, 1885, at the age of thirty years, of pulmonary phthisis, probably tubercular, after a succession of preceding illnesses covering a period of sixteen months,—namely, measles, subacute bronchial catarrh, an intercurrent abdominal typhoid fever, of severe type, with intestinal hem-

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\* Read by title.

orrhages, followed by chronic interstitial pneumonia, with undoubtedly final tubercular infiltration. She was a woman of delicate build and poor nutrition, though her parents are yet both living.

"The father—a physician in very active practice—died at the age of thirty-six years, five months later (February 27, 1886), of acute tubercular meningitis, nine days after a first initiatory general convulsion, followed by delirium and coma. His general health had been poor on account of overwork in practice and domestic cares, caused by the sickness of his wife. During the preceding year he had been troubled more or less with attacks of arthritis, mainly in the right wrist and elbow, supposed to be rheumatic, but probably tubercular. His only previous illness of any importance had been right-sided pleurisy, eight years before, resulting in adhesions, without crippling the lung seriously. Beside the tubercular meningitis, which the autopsy showed, moderate tubercular infiltration, particularly of the right apex, was also found. His parents had both died within the preceding three years,—the father of heart-failure (chronic valvular disease and hypertrophy), the mother of cerebral apoplexy (fulminant).

"*Patient's history.*—With the exception of pertussis and measles, which the patient had successively gone through with in the winter of 1883–84, and from which she fully recovered, although of slight build and delicate osseous and muscular development, nothing pathological occurred in her history until the latter part of the summer (August and September, 1886), six months after the death of her father, while spending a season with the family of her aunt at the sea-shore.

"On one occasion, after running and jumping, she suddenly complained of severe pain in the right leg, which, being looked upon as caused by a sprain, was treated by rest and liniments. She recovered from the effects of this, apparently, in a few weeks. But later on, after the family's return home, she was noticed occasionally to limp and to complain of pain in the leg. At this time no shortening or change of position of the limb was apparent; but it was thought best to keep her at perfect rest in bed, and later, in November and December, she was placed in extension. Examination under full anæsthesia

failed to disclose positive evidence of destructive hip-joint disease.

"As the little patient became very restless in bed, and the pain had markedly subsided, it was thought proper to give a trial by allowing her to sit up in easy-chairs, after removing the extension. A few weeks' freedom, limited, however, to sitting up in the room, was followed by some increase of pain, slight eversion of the limb, with apparent shortening, and a certain amount of puffiness of the hip-joint. She was then placed a second time in a permanent recumbent position with extension, and while under anæsthesia, manipulation of the limb showed neither crepitation nor roughness of the articulating surfaces.

"She remained in the extension apparatus, with counter-irritation around the joint, roborating treatment, and good diet, until some time in April, when shortening and eversion became more marked, when the weights were temporarily removed, and the question of excision of the joint came up.

"Dr. A. Jacobi was called in consultation, the patient once more placed under an anæsthetic, and this time, on rotating and pushing the femur up towards the acetabulum, distinct crepitation was detected, leaving no longer any doubt of the existence of destructive coxitis. It must be remarked here that no marked elevation of temperature had been observed during the progress of the disease.

"Excision of the joint having been decided upon, as giving the patient the only chance for an approximately useful limb, and perhaps life, the operation was performed by Dr. E. J. Ill, of Newark, in his private hospital, April 23, 1887. The destruction of bone was much further advanced than had been suspected. All of the head of the femur had been destroyed, with the neck and the larger trochanter; there was little pus; the acetabular surface in its greater extent was smooth and healthy, and only towards the lower and outer border felt roughened; the roughness, however, was fibrous, and not that of necrotic or carious bone. After removal of all of the diseased portion of bone, the cavity left was thoroughly washed out with an antiseptic solution, packed with iodoform gauze, and she was placed once more in fixed extension.

"From this time on to within less than a week before the



child's death, on July 8, 1887, the case was one of unbroken favorable progress. The shock of and reaction from the operation were almost *nil*. There was very little rise of temperature during the first two days, and none subsequently; what little secretion the wound cavity showed at the various dressings was inodorous, and healthy granulations soon commenced to fill up the acetabular bottom of the wound, the end of the femur became covered by smooth granulations, so that at the end of eight weeks, the wound having almost closed, the little patient, when the weights were removed, took delight in showing how she could move the leg. She was moderately encouraged in this in order to induce the quicker formation of a serviceable artificial joint.

"About five days before death she commenced to complain of severe pain in the left epigastric region, of a colicky character, and intermittent; there was no rise of temperature, and the bowels were freely open. On deep palpation an indefinite tumescence could be felt in the left epigastrium, with more or less distinctness, at various examinations.

"This state of things continued up to forty-eight hours before death, when, suddenly, without any premonitory symptoms of cerebral trouble, she was seized with general convulsions, lasting from ten to fifteen minutes, from which she recovered gradually to complete consciousness, but complaining of much headache. This was followed by rise of temperature the next day, and the recurrence of four more convulsions up to the time of death, with increasing headache during the intervals, the last convulsion being quickly followed by coma and death. The urine had been normal.

"*Autopsy* made by Dr. E. J. Ill in my presence.

"There being, in our opinion, no doubt whatever that the cause of death was tubercular meningitis, the brain, under the peculiar circumstances surrounding the case, was not examined. The main object was to inspect the reparative process in the joint, to examine the lungs and heart, and to find, if possible, an explanation of the tumescence in the left epigastrium, the seat of the severe pain before the occurrence of the fatal convulsions.

"The reparative process in the joint had been remarkably

complete. The acetabular cavity had filled up completely, the femoral covering smooth, and the formation of an artificial joint with good socket was certainly only a matter of time had the patient lived.

"The heart was found healthy, free from endocardial or valvular lesions.

"The apices of both lungs presented several areas of disseminated miliary tubercles.

"On removing the abdominal integuments and the overlying intestines, a tumor was readily felt and seen at a point corresponding to the tumescence, noticeable on deep palpation during life, and, on its removal, it was found to be *aneurismal*, involving the abdominal aorta.

"Circumstances did not permit any further and more minute examination."

From a letter of Dr. Lehlbach's, dated October 9, 1888, I quote the following remarks :

"There is hardly a doubt as to the nature of the hip-disease of the little patient. It was certainly tubercular, for there were tubercles in the lungs also. By what road, however, bacilli entered the abdominal aorta is problematical for the present. The occurrence of parasitical (also tubercular) aneurisms has been demonstrated by Hans Eppinger in his 'Pathogenesis of Aneurisms' (Langenbeck's *Arch. Klin. Chir.*, vol. xxxv., Suppl.). But all of his observations refer to aneurisms by erosion, in the closest proximity to cavities, where the migration of bacilli took place from the pulmonary tissue into the structure of the blood-vessel. I have not succeeded in finding among the cases recorded by Eppinger a single one similar to mine, always provided that this was also of tubercular nature."

The modern literature on the subject of aneurism in the young is but scanty. In 1884 (*Med.-Chir. Trans.*, vol. lxxvii.), R. W. Parker collected fifteen extracranial cases. Sanné reported from literature three cases of aneurism of the aorta and atheromatous degeneration of the aorta in the young (*Revue Mens. des Mal. de l'Enfance*, February, 1887), and added a new one, in a girl of thirteen years. The latter, and ten more from literature, are enumerated by W. W. Keen

("Two Cases of Aneurism in Girls of Eighteen and Eight Years of Age," *Med. News*, December 24, 1887), who thus swells the number of cases of extracranial aneurisms to twenty-eight. Lehlbach's case, so graphically described by him in the above history, is the twenty-ninth. Unfortunately, the specimen has disappeared from my premises in an unaccountable manner, and I therefore fear the accurate description of the case and its histological etiology will be rendered impossible forever. Still, even so, the small number of cases thus far known constitutes this new case a welcome addition to those hitherto reported. It is more than merely possible that tubercular invasion was the primary cause of the aneurismal dilatation described above.

The cases of aneurismal dilatation may be various. In the case of Hutchinson (*Trans. Pathol. Soc. of London*, p. 104, Keen) the cause was an *abscess*. The patient was a girl of four years, who suffered from an aneurism of the arch of the aorta. No prior symptoms of aneurism. Child died, after ten days' illness, of acute pericarditis. Mr. Hutchinson believed that the aneurism originated as an abscess, and had ulcerated into the vessel. The lining membrane of the aorta was smooth and perfectly healthy up to the edges of the orifice of communication (one-fourth by one-eighth of an inch) with the sac. This was the size of two chestnuts placed side by side, and hung from the arch of the aorta into the pericardium, compressing somewhat the pulmonary artery. The heart was normal, but in the lungs were tubercles, with chalky concretions in the bronchial glands.

Another cause is *embolism*, depending on valvular disease. Of this nature was Langton and Bowlby's case (*Brit. Med. Jour.*, 1886, ii. p. 103). The patient, a girl of twenty, had ulcerous endocarditis, an aneurism of the right elbow, right popliteal, and hemiplegia. There were multiple emboli and aneurismus in brain, trunk, and extremities. Many of Parker's cases are of this character.

The third is *endarteritis*, as in Moutard-Martin's case, which occurred in a boy of two years, who had an atheromatous arch and a hypertrophied heart. Such occurrences are extremely rare. Under the heading of *periarteritis nodosa*,



Kussmaul and R. Maier described (*Arch. f. Klin. Med.*, I. p. 484) certain multiple degenerations of the arteries. Their case was observed and examined at a time when no other cases had been treated with equal care. They took the little swellings for nodules of connective tissue, and thus came to the conclusion that they had to deal with a new form of periarthritis. Eppinger draws attention to the fact that a number of these nodules are distinctly described as being hollow, and is undoubtedly correct in ranging their case among those (few of which have been hitherto observed) of multiple aneurismal degeneration. Of the same nature was a case of P. Meyer (*Virch. Arch.*, lxxiv. p. 277) and that of Weichselbaum and Chrostek (*Allg. W. Med. Zeit.*, 1877, No. 28).

*Congenital incompetency of the walls of blood-vessels* is another cause of aneurismal dilatation. Voigtel insisted first on this connection, Cruveilhier described a case of cirroid aneurism depending on congenital thinness of the tunica media, and refers to the fact that sometimes a thin artery cannot be diagnosticated from a vein. Virchow explained the most persistent and incurable cases of chlorosis by the thinness and smallness of the arteries, and met with a case of simple dilatation of the blood-vessels of the pia mater and consequent aneurism which depended on atrophy of the media. Klebs observed thin vessels in a dropsical child of thirty-two weeks, and C. O. Weber, Balassa, and Gull refer to the influence of congenital atrophy and debility of the arterial walls. Finally, the case of hereditary cerebral hemorrhage observed by Dieulafoy (*Gaz. Hebdom.*, 1877, Nos. 16 and 18) is apt to illustrate the influence of the original structures on the formation of pathological conditions.

It is to this class that belong the anatomical alterations of the elastic tissue in the walls of the arteries. Eppinger's researches are contained in a special part of his "Pathogenesis of Aneurisms," which fills entirely the 562 pages of the third and fourth fascicles of the *Arch. f. Klin. Chir.*, of 1887, and reports among many other cases the following new one:

"A girl of ten years died in 1875, in the St. Anne Children's Hospital, with the symptoms of universal marasmus. No syphilis. There were no remarkable anomalies of any organ,

with the exception of the heart. It showed a very large number of aneurisms, hundreds of which—up to a width of four millim., with either large or small orifices—originated all along the walls of the right and left coronary arteries with all its very smallest ramifications. The intercostal arteries were in the same condition.”

His microscopical examinations have led to very remarkable results. He found that even every nodulated thickening, or apparent thickening, of the walls of the small arteries was indeed a true aneurism. These were not always of the same description. The elastic tissue was abruptly torn, the muscular layer also more or less extensively, and the two joining each other, or rolled up into each other, in the most various ways. In the wall of an aneurism thus formed not a trace of either muscular or elastic tissue can be found. That wall consists of the thickened intima and the adventitia closely attached to it. Now and then aneurisms were found at the bifurcation of arteries, so that it consisted of both a dilatation of the artery and a branch. Almost all these aneurisms had a centrifugal development,—that is, they were developed and enlarged in the direction of the circulation. In some the muscular layer did not stop abruptly, it grew gradually thinner, and exhibited granular degeneration, but the main part of the aneurism consisted of the intima and adventitia. Whenever all of the arterial layers were intact, there never was a dilatation, but only when either the elastic or the elastic and muscular layers were absent.

This condition of things is found exclusively in the arteries of medium or of small size. In them the elastic layer consists of a uniform and thin mass; in the large arteries, however, the elastic membrane extends into the other layers. It is a noteworthy fact that the aneurisms referred to occurred mostly on bifurcations. It is here that the elastic membrane is thinnest under ordinary circumstances.

A fifth cause of aneurism is to be found in morbid *histological alterations of the blood-vessel walls*.

P. Meyer published a series of careful investigations, mostly made on the pulmonary artery (in Recklinghausen's laboratory), on “the formation and significance of hyalin in aneur-

isms and the blood-vessels.”\* That name—hyalin—was given by Recklinghausen to a substance which is believed to originate in a metamorphosis of the protoplasm of the cells. It is homogeneous, refracts the light strongly, and is mostly penetrated by a net-work of fine canaliculi, or by irregular fissures and lacunæ. It is identical with what Langhans described under the name of “canalized fibrin” in the placenta; its origin is attributed to a transformation of the white thrombus. It is true that Auerbach and others deny the existence of this substance, but Meyer claimed to have found it in a case of periarteritis nodosa.†

In order to study the aneurisms of the pulmonary artery, he made fine sections through the blood-vessels protruding into a pulmonary cavity, and examined the blood-vessels, which were not changed at all, or but little. The principal alterations were met with in the media. It was absent in the aneurismatic sac, present in the opposite wall, and gradually disappeared between the two. In the vessel the intima was hypertrophied; at the beginning of the dilatation it was covered by a thin and homogeneous layer, which showed a strong refraction of light and penetrated into the very tissue of the intima. In the convexity of the aneurism itself the whole vessel had undergone that change; the hyaline substance being perforated by a net-work of canaliculi devoid of walls. The inner layers were of a looser consistency, the lacunæ being more irregular and exhibiting thrombotic deposits. Externally, the wall of the aneurismatic sac, thus altered, exhibited a gradual transition into the caseous granulation tissue which formed the wall of the cavity.

Adopting this theory of anatomical changes in the blood-vessel walls, as a predisposition to aneurismal dilatation, Julius Hoffnung‡ reports a case of aneurism in a branch of the pulmonary artery in a girl of ten months, who died of hæmoptœ. The left lung adhered firmly to the costal pleura.

\* *Arch. de Physiol.*, 2me sér., vii. (4) p. 598, 1880; *Schmidt's Jahrb.*, 1888, vol. cc. p. 201.

† *Virchow's Arch.*, vol. lxxiv. p. 277.

‡ “Ueber Hæmoptœ bei Kindern,” Inaug. Diss., Berlin, 1885; E. Henoeh, “Vorles. üb. Kind.,” ed. iv., 1889, p. 412.



During its removal the pulmonary pleura was torn about the middle of the lung, and a brownish-red fluid escaped. The upper lobe was solid with hepatization, the centre of which was formed by a caseous mass of the size of a hazel-nut. There was a cavity of the size of a pigeon's egg filled with the above-mentioned fluid. In that cavity there was a tumor of the size of a hazel-nut which proved to be an aneurism of a branch of the pulmonary artery; it still contained a firm parietal thrombus which clung to its wall. The lower lobe of the lung was also hepatized.

F. Rasmussen\* had the care of a "very young" girl, who had pulmonary phthisis and died suddenly in an attack of hemorrhage. All the healthy bronchi were obstructed by blood. A careful section of the lung revealed a very small cavity on the boundary line between the indurated and the aërated portion of the lung. A small artery followed the bronchus leading into the cavity; on the very spot where the artery was in contact with the wall of the cavity, a small aneurism was found which was ruptured. In its interior was found a layer of an older coagulum which pressed into the rent.

The same author published the case of a boy of three and a half years who was known to be phthisical, and died suddenly of hemorrhage. The autopsy exhibited in the lungs a chronic interstitial and caseous pneumonia, peribronchitis, and miliary tubercles. There was an aneurism of a branch of the pulmonary artery which had ruptured into a cavity. There were also miliary tubercles in the pleura, spleen, liver, and kidneys.

O. Wyss† reports the case of a child of a little more than a year who was attended for diffuse capillary bronchitis with infiltration of the right apex. An emetic was administered. An attack of coughing followed the first vomiting, and with it a large amount of clear red blood was discharged through both nose and mouth. Death was immediate. There was, in

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\* Hosp. Tidende, xii., Nos. 11, 12; *Nord. Medic. Archiv*, i., No. 12; Julius Hoffnung, p. 18; Hirsch, *Virchow's Jahr.*, 1869, ii. 101.

† C. Gerhardt, *Handb. d. Kinderkr.*, iii. (2) p. 807.

the right apex, a caseous "pneumonic" infiltration, in the centre of which was a cavity of the size of a walnut which communicated with a bronchus. Near by was found an aneurism of a branch of the pulmonary artery, which had ruptured into the cavity.

Ch. West,\* when reporting seven cases of fatal pulmonary hemorrhage in tuberculous children, three of whom were examined after death, found the cause of the hemorrhage in one. A cavity in the lower part of the right lower lobe was traversed by a vessel on which an aneurism had formed of the size of a hazel-nut.

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## TWO CASES OF NYSTAGMUS ASSOCIATED WITH CHOREIC MOVEMENTS OF THE HEAD IN RACHITIC BABIES.

BY A. CAILLÉ, M.D.,

New York.

UNDER the titles *spasmus nutans*, *nictitatio spastica*, etc., several writers have reported cases of clonic spasms of a group of muscles innervated by the accessory nerve, notably the sterno-cleido mastoid, trapezius, and recti capitis muscles.

This muscular unrest may be unilateral or bilateral, and ceases during sleep.

Nothing is known as to the etiology of this condition.

In severe cases of long standing the prognosis is unfavorable, and the treatment is limited to the removal of any form of reflex irritation which may be present or is supposed to exist.

A short description of *spasmus nutans* may be found in some of the text-books on nervous diseases and diseases of children and in reports by Newham, Henoeh, Ebert, Fournier, Demme, and others, *vide* Eulenberg's *Encyclopædia* article, "*Spasmus Nutans*," vol. xii.

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\* Lectures, 7th ed. p. 531.

As the two cases which came under my notice presented features not hitherto described, I have concluded to report them.

The first case seen by me was that of a child eleven months old, in which the choreic movements were noticed by the mother on the day following an injury to the head by falling from a high chair. The muscles supporting the head were in such a state of unrest as to seriously interfere with the comfort of the child. The child soon became peevish, refused to take food, and became emaciated in appearance.

A careful examination showed a marked rachitic development and nystagmus of the horizontal type. The eyes were examined by competent ophthalmologists,—Drs. Koller, Schaplinger, and E. Fridenberg,—and, excepting nystagmus, nothing abnormal was detected.

It was furthermore noticed that if the child's attention was engaged by a shining object held at some distance above the eye-level, nystagmus and choreic movements would cease during fixation.

It was also apparent that the movements of the head were not the consequence of muscular weakness, but, on the contrary, it seemed as though they were due to a distinct effort on the part of the child for the purpose of visual fixation, made difficult by the existing nystagmus.

The application of an eye-bandage suggested itself, and as soon as this was in such a position as to exclude every ray of light the choreic movements ceased completely; if, however, the bandage was so applied as to admit but very little light the head movements persisted.

This phenomenon was observed by a number of my colleagues, and could be reproduced at any time.

Under such circumstances a permanent eye-bandage suggested itself as a therapeutic procedure. The bandage was properly applied, and removed but once a week for cleansing purposes. The child was carried to the river-side daily, and was treated to salt baths and massage. The diet was regulated and phosphorus given internally.

This treatment was faithfully carried out by the mother, and at the end of three months nystagmus and choreiform move-



ments had ceased, and the child was plump and healthy in appearance.

In a second child the symptoms manifested themselves after an attack of measles. At the time of presentation there were moderate conjunctivitis, the nystagmus of the vertical type, and the movement of the head; treatment and ultimate good results the same as in first case.

It appears from these observations that the localized clonic muscular spasms were either compensatory to the movements of the eyeball or reflex from irritation occasioned by the light to those structures which are concerned in carrying the impression. In view of the fact that the choreic movements ceased as soon as all light was excluded from the child's eyes, I am unable to formulate a more satisfactory explanation of the phenomena observed than the one I have expressed.

DISCUSSION.

Boston, September 16, 1889.

W. D. BOOKER, M.D.:

*Dear Sir,*—I see that Dr. Caillé is to report two cases of nystagmus at the meeting of the Pediatric Society. I am sorry to say that I shall be unable to be present; but I thought that, perhaps, you might like to mention that, some years ago, I had under my care two babies, children of the same parents, their difference in age being about one and a half years.

These babies were both, so far as I could determine, perfectly healthy, as were the parents, but they both had nystagmus, with no other symptoms of disease. The nystagmus began in the dental period; lasted a number of months; in both cases recovered entirely on the completion of dentition, and under purely expectant treatment. Hoping that you may find these cases interesting in connection with Dr. Caillé's, I am

Yours, very truly,

T. M. ROTCH.

## REPORT ON TWO YEARS OF EXPERIENCE IN THE MECHANICAL TREATMENT OF GASTRO- INTESTINAL DISTURBANCES IN INFANTS.

BY A. SEIBERT, M.D.,

New York.

By mechanical treatment of gastro-intestinal disorders we understand the washing out of the stomach and of the large bowel of the patient.

There is no more doubt in our minds to-day regarding the origin of these affections in infants, in so far as we are able to trace their source to the food getting into the digestive organs. It is immaterial whether bacteria or their products are the poisons producing the different forms of gastric and intestinal catarrh, and their consequent pathological changes, as long as we know how these germs of disease enter the body; and this question, so much debated up to within a short time ago, we may now class among those settled once and for all.

The revolution this condition has brought about in the treatment of these ailments is apparent. Prophylaxis has taught us the proper preparation of infants' food and especially its sterilization, and it is gratifying to notice the wide-spread interest taken in this preventive measure, although, on the other hand, we may readily see in some of our medical journals that quite a number of the authors of the typical papers on summer diarrhoea have no more a correct idea of exact sterilization than many practitioners as yet have of antiseptics in surgery.

If, then, modern research compels us to prevent the entrance of infected food into the child's stomach and intestines, then logically it ought also to compel us, where such infection does occur, before all other measures are resorted to, to empty these organs of the remaining noxious material. We can here state that the profession here and abroad, with few exceptions, has been too conservative and too theoretically slow in following this

imperative indication,—an indication so clear and logical that in the great majority of these cases we might put it into these few words: "Clean the stomach and the intestines and your patient is cured."

This indication is not a new one. The best practitioners have followed it up with medicinal agents long before bacteriology was thought of. But we cannot cleanse a stomach with calomel or castor oil in such a manner as to call it clean afterwards. Epstein's proposition to employ Kussmaul's method of stomach-washing in infantile gastro-intestinal catarrh had been overlooked for nearly eight years; and though Baginsky has made bowel-washing popular, and many of us have adopted it, yet, on the whole, we may say that but very few practitioners at the present date think of treating each and every case of infantile diarrhoea by large enemata.

It is not my purpose to go into detail to-day, as I have done that before in a paper published in the *ARCHIVES OF PEDIATRICS* in April, 1889; but I simply wish to encourage practitioners in general to at least give this mechanical treatment a fair trial, and for this purpose I venture to report my experience to this Society. Knowing that this first meeting of the American Pediatric Society will be followed up with great interest by a large number of medical men, I hope that this may help to make known this mechanical method, so as to benefit as many little patients as soon as possible.

Since September 1, 1887, I have treated all cases of intestinal catarrh in children under three years of age under my care by bowel-washing, and all cases of acute gastro-intestinal catarrh (cholera infantum) by stomach- and bowel-washing combined. In chronic enteritis, resulting in atrophy and marasmus, I have also washed both organs invariably, and in severe cases of infantile dyspepsia I washed out the stomach.

My cases came under observation in private practice, in the children's department of the New York Polyclinic, and of the German Dispensary. I include all cases treated by Dr. H. W. Weber, my assistant at the Polyclinic, as they were also nearly all seen by me, and also those of Dr. R. Stein, my colleague at the Dispensary, who has kindly added his cases of the last twelve months, making in all fourteen hundred and four cases



of gastro-intestinal catarrh in infants and children under three years of age.\*

Stomach-washing was employed in five hundred and twenty-one cases. The great majority of these were cases of cholera infantum (acute gastro-intestinal catarrh). Of those who reported again I can record six deaths. Every child not alone stood the washing well, but also rallied more or less in every instance from the collapse it was in before washing. Not one child grew worse from this procedure, and even in the fatal cases the children evidently felt relieved, and not once did depression, convulsions, or death occur immediately after the washing.

In all cases of entero-colitis stomach- and bowel-washing were employed. All children were evidently relieved, but those cases in which true inflammation of the intestines with peritonitic irritation had developed usually ended fatally, though nausea ceased in every instance and the temperature was usually lowered. These cases numbered eight, with six deaths.

My chronic cases (about one hundred) all got well with one exception, where the mother was suffering from acute tuberculosis and the child had been coughing since it was four weeks old. The child failed constantly and died when two and a half months old.

All cases of intestinal catarrh (diarrhoea), whether mild or severe, were treated by bowel-washing performed from one to three times daily. The effect was most gratifying to the children, their colic and pain usually subsiding. In this class of cases I did not have to sign a death certificate at the Dispensary during June, July, and August of this year, hitherto an unusual result during these summer months. The enemata were given with plain warm water, medicinal additions only being made in cases of follicular enteritis with bloody stools, where a weak solution of nitrate of silver (1 to 500) was injected after the bowel had been cleansed by sterilized water.

Severe forms of dyspepsia in infants were all cured by

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\* The cases were not tabulated, as some could not be followed up, for the children were not brought back, and therefore these statistics are given with the full understanding that they are not perfect.

regulation of diet and stomach-washing, after most cases had failed to get well on proper dieting alone. Among the dyspeptics was the youngest patient, my own child, then thirty-six hours old. This little girl vomited everything brought into its stomach, including mother's milk, black tea, and plain water. As its little brother, now two years old, had suffered in a similar manner during the first week of his life, weakening him considerably and leaving an exquisite dyspepsia for weeks after, I determined to clean out the stomach of the baby, which evidently, like its predecessor, had swallowed water and mucus during birth. My supposition proved to be correct, for a considerable quantity of water and mucus left the stomach on the catheter coming into the fundus ventriculi, and after a thorough cleansing with warm water the nausea disappeared. The baby stood the proceedings perfectly well (being no more disturbed than if its throat had been inspected by means of a tongue-depressor, and that only in the beginning), although it only weighed seven pounds and had retained no food since birth. It took the breast thirty minutes after the washing and retained the milk, then and since.

A number of writers speak of stomach-washing as of a rude method, apt to produce depressing effects and even collapse in the patient. They caution their readers not to employ it in collapsed children. I cannot agree with these writers. The undertaking will only be rude in the hands of those who also cannot look into a throat without great efforts, painful to behold and distressing to the mother and child. I have also never had a refusal by the parents when I did propose this means of helping their offspring. The experiences of these authors appear to be somewhat limited, as not one of them so far has given any figures.

Collapse in cholera infantum, to my mind, is the strongest possible indication for stomach-washing, and I can make this statement: *The deeper the collapse the sooner the stomach and bowel ought to be washed.*

My last case, first seen September 14, was a twin baby thirteen months old. The twin sister had died in collapse due to severe cholera infantum one hour previous to my

arrival. Both breast-fed children were attacked simultaneously two days before. The mother had nursed her children from six to ten times at night alone. The living child, like its sister, a strong, well-built baby, was very low, with pulse absent, in deep prostration. The parents expected death. No oedema pulmonum was as yet present, and so I concluded to wash out the stomach and intestines. Though the parents were very ignorant Russians, who could hardly understand me, they readily consented. The child rallied immediately and was practically out of danger the next morning, making a perfect recovery. Of stimulants, only black tea and large quantities of plain water were given; of medicines, only four powders of calomel, each containing one grain.

The catheter I use in stomach-washing is a soft-rubber velvet-eye tube, corresponding in size to a No. 10 steel bougie (Tiemann), or No. 13 A, thirteen inches long. Attached to this is a glass tube six inches long, necessary to thus bring the outer opening lower down than the fundus of the child's stomach, and to better judge whether the escaping fluid is perfectly clear or not before withdrawing the tube. This glass tube is connected with the regular irrigator (Eissner & Co., New York) or with any ordinary clean fountain syringe.

In bowel-washing a fountain syringe will answer all purposes as long as the child's buttocks are elevated sufficiently so as to let the water run up into the transverse and the ascending colon. It is absolutely necessary that so much water should be allowed to flood into the bowel till reactive abdominal pressure of the child throws it out again alongside of the point of the syringe. The water had better be sterilized by boiling thirty minutes.

#### DISCUSSION.

DR. KOPLIK.—I have had some experience with this method. As regards apparatus, Epstein does not use any of the modifications which have been suggested, but still uses the original, consisting of a No. 9 Jacques catheter connected to a rubber tube by a piece of glass tubing and a small funnel. I have seen in a European clinic, where an irrigator was used instead of Epstein's form of apparatus, an assistant, who had had considerable experience, allow the water to flow too rapidly



into the stomach, causing convulsions, which continued half an hour. But the child finally recovered.

The reaction is very slight. If the method of Epstein is closely adhered to, the stomachs of children eight days old can be washed out without any reaction. This original Kussmaul funnel and tube is the apparatus which should be recommended to the general practitioner.

We must remember that Epstein's cases do not include our cases of cholera infantum. I have not seen any severe cases of this affection over there. I have had no experience in washing out the stomach in cases of cholera infantum where there is collapse. I should fear that, even if the child did recover, the shock to the feelings of the parents would drive them away.

The diet of the child after the washing out is very important. The simple washing out will not cure the case. Epstein, after washing out the stomach, puts the children for twenty-four or thirty-six hours on albumen water, made by dissolving the whites of two eggs in a litre of water, the whites of the eggs being first beaten up in the water and then filtered. They are allowed gradually to return to the breast. The stomach is washed out half an hour after breast feeding, according to the necessities of the case.

DR. KEATING.—I think that the washing out, so far as it goes, is very well; but there is always a portion that is not reached by the water. We can readily wash out the stomach and the rectum and a portion of the colon, but we do not reach the small intestine, whose calibre may be almost entirely obliterated by congestion and by mucus. In conversation with Dr. Jeffries, the fact was brought out that, if the most perfect form of sterilized food were given, and the food was mechanically arrested by the cessation of peristalsis for any length of time, bacteria would develop in it and provoke serious trouble. This is an important point. We may wash out the stomach and give proper food, but still the acute symptoms will continue and the food disagree. I believe that in these cases the small intestine is affected, and here we cannot reach by the mechanical treatment. The only treatment that we can adopt is to liquefy the mucus by alkaline solutions and to prevent putrefaction. If we use large quantities of water, containing an alkali, as bicarbonate of soda, a certain amount will get through the pylorus, if the operation is performed gently. I have seen good results from that. The difficulty in many of these cases, I believe, lies in the fact that the small intestine is partially blocked up; and in these cases the addition of the alkali is of value.

DR. BOOKER.—Dr. Seibert has done a good work in introducing into this country stomach-washing in children. This method of treatment was largely practised at the Thomas Wilson Sanitarium for sick children during the past summer. I agree with Dr. Seibert in regard to the effect of washing out the stomach in cases of collapse. While there were no cases of extreme collapse of cholera infantum at the Sanitarium, there were many of diarrhœa, in which there was a certain degree of collapse; and in these cases great benefit was derived from washing out the stomach.

In summer diarrhœa in children there are certain obvious advantages to be gained by the operation. It rids the stomach of milk curds which accumulate there, and which would otherwise pass into the intestine and produce irritation; it removes the thick mucus, gives the stomach a chance to rest, improves its tone, quiets restlessness, relieves vomiting, and diminishes the number of stools.

I have found mild curds in the stomach four hours after feeding, and have seen them gradually disappear by subsequent washing, and at much shorter intervals after feeding. As a rule, children fall asleep shortly after the operation, and have several hours of good refreshing rest.

Previous to the adoption of this plan of treatment at the Sanitarium, it was often necessary to stop all milk food for twenty-four to forty-eight hours in cases of severe vomiting; but since this method has been used very few cases required any interruption in the milk diet.

Washing out the stomach, though of great advantage in most cases, is not always beneficial, and in some I believe that it may do harm. There have been two cases in which I regretted using the measure; both were feeble, with poor nutrition, and almost dead when brought to the Sanitarium. One child had been taking blackberry juice, and in washing out the stomach a quantity of dark clots came with the milk. These were not carefully examined, and I did not think of blood at the time. The child improved after this washing, and I felt encouraged to repeat the operation the following day, when the dark clots were again noticed, and proved to be composed of blood, and there was a little fresh blood on the end of the tube when it was withdrawn. It is probable that clots were removed from a bleeding surface and a fresh hemorrhage started. The child failed from this time.

The second case also improved after the first washing, but after the second grew worse. In this case the body was chilled by imprudence on the part of the mother soon after the operation, and it is possible that too much water was allowed

to run into the stomach siphoning, which it is important to avoid. With these two exceptions, improvement followed from stomach-washing in nearly every case, and in many it was very decided.

Stomach-washing is followed with advantage, in many cases, by intestinal irrigation. This should be done after the child has rallied from the sleep. There is no prostration following this operation, the pulse being strengthened rather than weakened.

Intestinal irrigation has been used at the Sanitarium for the past five summers. I believe the irrigation does affect the small intestine; not that the water enters the small intestine,—though I have known this to happen in two cases,—but that it excites peristalsis and the intestine is emptied. The greatest benefit has been observed in cases where the irrigation was thoroughly done, and a large quantity of fecal matter brought away.

While the mechanical treatment is of great advantage in the treatment of summer diarrhoea in children, it is not sufficient alone to effect a cure. In acute cases and in the beginning of the sickness, with proper diet, almost all can be cured by the mechanical treatment without medicine. In many cases, however, especially chronic cases, benefit follows to a certain extent, and then no further good appears to be accomplished by this treatment.

DR. VINEBERG.—I have had some experience with this method. As it is disagreeable and takes considerable time, in my opinion, it should derive its value from its beneficial effects in severe cases. Mild cases get well without it. It is only in such instances, then, that I have employed it, and in almost every case the child died. There was some improvement for a time. I observed that vomiting occurred on the passage of the tube into the stomach, and that the fluid came out, not through the tube, but along the side of it.

THE PRESIDENT.—What becomes of the large clots which we sometimes see brought up by vomiting? These could not pass through any tube introduced into the stomach.

DR. KOPLIK.—Most of the children treated by this method originally were breast-fed; and I doubt whether, in these cases, the clots are so large. It is surprising how large a clot may come through a small tube. They come up in long strings.

DR. SEIBERT.—I stated in my paper that I did not wish to go into the details of this procedure. If I had, I should have referred to all these points. The point that I wish to emphasize is that, in washing out the stomach, it must be



emptied. In children over two years of age I sometimes wash out the stomach by getting them to drink water and then induce vomiting by inserting the forefinger in the pharynx.

In cholera infantum I fill the stomach rapidly. It is important to get rid of the poison quickly. I let the children vomit. I do not wait for the water to come through the tube. I fill and empty the stomach several times before the washing is completed.

THE PRESIDENT.—I think that in many of these cases the plan of filling the stomach with water and then inducing vomiting would work well. Many of the old writers insisted on the use of an emetic in these cases. An emetic may be safely given to children because they vomit so easily.

I fear that this addition to the therapeutics of the alimentary canal will in a few years suffer discredit which it does not deserve, because too much is expected from it.

The objection of Dr. Keating has great weight. The small intestine is proportionally longer in the child than in the adult. Between the stomach and the sigmoid flexure there are a number of feet of intestine that cannot be washed out. It is in this part that the catarrh is principally located. Therefore the dogma that cases are to be treated by washing out of the rectum and sigmoid flexure alone is dangerous, as the rest of the intestinal tract is not taken care of.

While I regard this as a valuable addition to our therapeutic measures, the fact should not be lost sight of that we need a good deal more. We want a strict diet; we want disinfection of the intestinal canal; we certainly want the alkaline treatment, and, perhaps, many other things. As far as rectal injections are concerned, I need not add that there is not even a shadow of novelty in that.

DR. SEIBERT.—I fully coincide with what the president has said. I do not want to be understood as saying that the mechanical treatment is the only treatment. It is only a symptomatic treatment. It is one part of the treatment that we should employ. In these cases it is imperative that we should remove decomposing material, bacteria and their products, which accumulate more in the lower portion of the bowel than anywhere else. I believe that we can cure cases better and quicker in this way. We can, of course, employ medicines and regulation of the diet besides.

THE PRESIDENT.—I have washed out the intestines constantly for twenty-five or thirty years, but I know that we cannot get the water beyond the sigmoid flexure. In the infant there is such a length of descending colon that instead of one flexure there may be two or three, the colon extending

to the right side of the pelvis. In the adult we sometimes succeed in reaching the valve and occasionally going beyond the valve. We cannot do that in children. While we may rely upon irrigation in catarrh of the rectum and other forms of dysentery, we know that we can reach only the lower part of the colon, unless we raise the pelvis above the level of the chest. In that case, particularly under the influence of an anæsthetic, which I use to overcome intussusception, the fluid will enter the colon.

DR. CAILLÉ.—During the past six months I have performed some experiments to see how far fluids could be introduced into the gut. I have taken a fountain syringe, holding three quarts, and elevated ten feet. I tried to force water above the valve in the cadaver in ten cases, but failed in every one. I also attempted to overcome the difficulty by introducing a long rectal tube as far as it would go, but in no case did the water go above the valve. These experiments correspond with my observations on the living, and thus I am convinced that only in very exceptional cases will it be possible to irrigate the bowel above the cæcum.

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## A STUDY OF SOME OF THE BACTERIA FOUND IN THE FÆCES OF INFANTS AFFECTED WITH SUMMER DIARRHŒA. (*Second communication.*)

From the Pathological Laboratory of the Johns Hopkins University.

BY WILLIAM D. BOOKER, M.D.,  
Baltimore, Md.

(Continued from February Number.)

### BACILLUS c.

Found in one case of cholera infantum.

*Morphology.*—Resembles bacterium lactis aërogenes.

*Growth in colonies and stab cultures.*—Stab cultures and colony growth in gelatin and agar resemble bacterium lactis aërogenes.

Potato: The culture on potato also resembles that of bacterium lactis aërogenes, but it is more luxuriant and the surface is more thickly covered with gas-bubbles.

*Action on milk.*—Milk remains apparently unchanged and is not coagulated.

*Litmus reaction.*—Milk colored blue with litmus is changed in seventy-four hours, at 38° C., to a light purple, and holds this color for a number of days, when it gradually becomes reduced to a dirty cream color. Slightly acid gelatin colored light red with litmus is changed to blue.

Spores have not been observed.

*Gas production.*—Active production of gas-bubbles on potato; not observed in milk.

*Relation to gelatin.*—Does not liquefy gelatin.

*Resemblance.*—Closely resembles bacterium lactis aërogenes, but differs from it in not coagulating milk and in its litmus reaction.

#### BACILLUS d.

Found in two cases of cholera infantum and the predominating form in one serious case of catarrhal enteritis.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Gelatin: Colonies grow luxuriantly in gelatin, and thrive in acid and sugar gelatin equally as well as in neutral gelatin. In the latter the colonies closely resemble, but are not identical with, the bacterium coli commune. In acid gelatin they differ very much from bacterium coli commune. The colonies spread extensively, and are bluish-white with concentric rings. Slightly magnified, they have a large, uniform, yellow central zone surrounded by a border composed of perpendicular threads placed thickly together. Sometimes a series of these rings appear with intervening yellow rings.

Agar: The colonies are round, spread out, and blue or bluish-white. Slightly magnified, they have a pale yellow color.

*Stab cultures.*—Gelatin: In sugar gelatin the surface growth has a nearly colorless centre surrounded by a thick border with an outer edge of fine hair-like fringe; the growth along the line of inoculation is fine and delicate. In neutral gelatin the growth is not so luxuriant as on sugar gelatin; on the surface it is thick and white with a delicate stalk in the depth.

Agar: Thick white surface growth with a well-developed stalk in the depth.



Potato: Luxuriant yellow, glistening, moist, and slightly-raised surface, with well-defined borders.

*Action on milk.*—Coagulated into a gelatinous coagulum in twenty-four hours at 38° C., and into a solid clot in two days.

*Milk litmus reaction.*—Milk colored blue with litmus is changed to light pink in twenty-four hours at 38° C. The pink color gradually fades, and by the second or third day is white or cream color with a thin layer of pink on top. The pink color extends in a few days about one-half down the clot.

*Temperature.*—Grows better about 38° C.

Spores have not been observed.

*Gas production.*—Gas-bubbles are produced in milk; not observed on potato.

*Relation to gelatin.*—Does not liquefy gelatin.

#### BACILLUS e.

Found as the predominating form in two cases of dysentery, one of which was fatal and the other a mild case.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Gelatin: The colony growth varies considerably with slight difference in the gelatin. In ten per cent. neutral gelatin the colonies resemble those of bacterium coli commune. On the second or third day, when the colonies have just broken through the surface and are spread out, it is impossible to distinguish one variety from the other, but as the colonies grow older a difference can generally be recognized. In sugar and acid gelatin the colonies have a clear centre with white border; slightly magnified, a uniform brown centre surrounded by a brown zone composed of fine needle-like rays perpendicular to the border. After cultivating for a few generations on acid and sugar gelatin the colonies cease to develop, and either grow in very small colonies or do not grow at all. The activity is regained if cultivated on neutral gelatin.

Agar: Colonies are large, round, and have a mother-of-pearl appearance. Slightly magnified, a uniform yellow color.

*Stab cultures.*—Agar: Luxuriant, nearly colorless, surface growth with well-developed stalk along the line of inoculation in the depth.

Potato: Golden yellow, glistening, slightly-raised surface with defined borders.

*Action on milk.*—Milk becomes gelatinous in twenty-four hours at 38° C., and in a few days a solid coagulum is formed. Milk colored blue with litmus is reduced to white or cream color in twenty-four to forty-eight hours at 38° C., with a thin layer of pink at the top of the culture. The pink color gradually extends lower in the coagulum.

*Temperature.*—Thrives best at about 38° C.

Spores have not been observed.

*Gas production.*—Occurs in milk, but not seen in potato cultures.

*Relation to gelatin.*—Does not liquefy gelatin.

*Resemblance.*—Resembles bacterium coli commune and bacillus *d*; differing from the former in the character of the colony growth on acid and sugar gelatin and in ceasing to develop in these media after several generations. It differs from bacillus *d* in this latter respect.

#### BACILLUS *f*.

Found in one case of cholera infantum and one case of catarrhal enteritis.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Gelatin: It is difficult to distinguish the colony growth from the bacterium coli commune. There is often a difference in the colonies planted at the same time and kept under similar conditions, but it is not very marked nor always the same kind of difference. The tendency to concentric rings is greater in this variety. The colonies develop somewhat better on neutral and sugar gelatin than on acid gelatin.

Agar: The colonies are large, round, and bluish-white. Slightly magnified, a light yellow color.

*Stab cultures.*—Gelatin: The culture is spread over the surface and has a mist-like appearance; in the depth along the line of inoculation is a delicate stalk.

Agar: Thick, luxuriant, white surface growth with a well-developed stalk along the line of inoculation in the depth.

Potato: Bright yellow, glistening, moist surface with well-

defined borders and but slightly raised above the surrounding potato.

*Action on milk and litmus reaction.*—Milk is coagulated into a solid clot in twenty-four hours at 38° C. Milk colored blue with litmus is changed to pink in twenty-four hours at 38° C., and in forty-eight hours is reduced to white or cream color with a thin pink layer on top.

*Gas production.*—Gas-bubbles arise in milk cultures, but they have not been observed on potato cultures.

*Temperature.*—Grows better at 38° C.

Spores have not been observed.

*Relation to gelatin.*—Does not liquefy gelatin.

*Resemblance.*—It closely resembles bacterium coli commune and Brieger's bacillus in the character of its growth upon different media, but is readily distinguished from both, as is also Brieger's bacillus from the bacterium coli commune by the following differential test recently made known by Dr. Mall. Yellow elastic tissue from the ligamentum nuchæ of an ox is cut into fine bits and placed in test-tubes containing water with ten per cent. bouillon and one per cent. sugar, and sterilized from one and a half to two hours at a time for three consecutive days. Into this is inoculated two species of bacteria, one of which is the bacterium under observation, the other a bacillus found in garden earth and tetinous wounds. The latter bacillus is anaërobic, grows in hydrogen, nitrogen, and ordinary illuminating gas, in the bottom of bouillon, in the depth, but not on the surface, of agar stab cultures, and not at all in gelatin stab cultures. It has a spore in one end making a knob bacillus. Different species of bacteria—strep-tococcus Indicus, tetragenus, cholera, swine plague, bacterium lactis aërogenes, bacterium coli commune, Brieger's bacillus, and a number of varieties of bacteria which I have isolated from the fæces—were inoculated with the head bacillus into the above-described elastic-tissue tubes. The tubes inoculated with Brieger's bacillus developed a beautiful purple tint, which started as a narrow ring at the top of the culture, gradually extending downward and deepening in color until the whole tube had a dark purple color. This color reaction began in five to fourteen days and was constantly present in a large



number of tests. Tubes inoculated with bacillus *f* gave a much fainter purple color, which was longer in appearing and never became so dark as with Brieger's bacillus.

Tubes inoculated with the other species of bacteria above mentioned gave no color change and remained similar to control. Bacillus *f* also shows a slight difference from bacterium coli commune in coagulating milk and reducing litmus more rapidly, and appears to produce more active fermentation in milk. Like Brieger's bacillus, the gelatin colonies more frequently show a concentric arrangement than those of the bacterium coli commune.

#### BACILLUS *g*.

Found in one case of serious gastro-enteric catarrh. It was not in large quantity.

*Morphology and biological characters.*—In morphology, character of growth on agar, gelatin, and potato it resembles bacterium coli commune.

*Action on milk and litmus reaction.*—Milk is not coagulated, and milk colored blue with litmus is changed to pink in a few days and holds this color. These characteristics distinguish it from the bacterium coli commune.

*Gas production.*—Not observed in milk or potato cultures.

*Relation to gelatin.*—Does not liquefy gelatin.

#### BACILLUS *h*.

Found in one case of mild dysentery, not in large quantity.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Gelatin: In plain neutral gelatin the colonies resemble those of bacterium coli commune. In sugar gelatin the colonies are white and spread extensively. Slightly magnified, they have a round, dark centre surrounded by a yellow, loose zone with an outer white rim; later, the whole colony has a uniform yellow color and is not compact.

Agar: Colonies are white, round, and large. Slightly magnified, they are brownish-yellow.

*Slab cultures.*—Nothing characteristic in gelatin and agar.

Potato culture is yellow, dry, and slightly raised, with well-defined borders.

*Action on milk and litmus reaction.*—Milk is coagulated into a solid clot in two days at 38° C. Milk colored blue with litmus is changed to pink in twenty-four hours.

*Gas production.*—Occurs in milk; not observed on potato.

*Relation to gelatin.*—Does not liquefy gelatin.

#### BACILLUS *k*.

Found in two cases of cholera infantum and one of catarrhal enteritis.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Gelatin: In neutral gelatin the colonies cannot be distinguished from those of bacterium coli commune. In acid gelatin the colonies do not spread so extensively as those of bacterium coli commune, and they have a decided concentric arrangement, a wide white centre surrounded by a narrow transparent blue ring, and outside of this a white border. Slightly magnified, the colonies have an irregular yellowish-brown centre mottled over with dark spots and surrounded by a light yellow ring bordered by a brownish-yellow wreath.

*Agar:* Colonies are large, round, and bluish-white. Slightly magnified, a light brownish-yellow color.

*Stab cultures.*—Gelatin: In sugar gelatin the surface growth is extensive, nearly colorless, and has a rough, misty appearance. In the depth is a delicate growth. In plain neutral gelatin the surface growth is bluish-white, thick, and not so extensively spread; the growth in the depth is also thicker.

Potato culture is moist, dirty cream color, has raised surface and defined border.

*Action on milk.*—Milk becomes gelatinous in twenty-four hours at 38° C., and a solid clot in two days. Milk colored blue with litmus is changed to pink in twenty-four hours and reduced to white with a pink layer on top in two days.

#### BACILLUS *m*.

Found the predominating form in one case of mild dysentery.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Colony growth in gelatin and agar closely resembles that of bacterium coli commune. Stab cultures are also similar.

*Action on milk and litmus reaction.*—Milk is not coagulated and remains apparently unchanged. Milk colored blue with litmus is not changed in color to any extent. In old cultures the color fades a little, but is not changed from blue.

*Gas production.*—Not observed in milk or potato cultures.

*Relation to gelatin.*—Does not liquefy gelatin.

Spores have not been noticed.

*Resemblance.*—Closely resembles bacterium coli commune in many respects, but is distinguished from it in not coagulating milk or reducing litmus.

#### BACILLUS n.

Found in large quantity, but not the predominating form, in one case of chronic gastro-enteric catarrh extremely emaciated.

*Morphology.*—Resembles bacterium coli commune.

*Growth in colonies.*—Gelatin: In neutral gelatin the colonies are spread out and have a frosty or ground-glass appearance. The centre is blue and border white, but both have the ground-glass appearance. Slightly magnified, the central part is light yellow and the border brown with a rough, furrowed surface. In acid gelatin the white border is wider and the surface is rougher.

Agar: Colonies are round, blue, or bluish-white, and spread out. Under the microscope they have a light yellow color.

*Stab cultures.*—Gelatin: Has a rough, nearly colorless, surface growth and a thick stalk in the depth along the line of inoculation.

Agar: Thick white surface growth with well-developed stalk in the depth.

*Action on milk and litmus reaction.*—Milk remains liquid, and milk colored blue with litmus is changed to pink.

*Gas production.*—Not observed in milk or potato cultures.

*Relation to gelatin.*—Does not liquefy gelatin.

Spores have not been noticed.



BACILLUS o.

Found in one case of cholera infantum.

*Morphology*.—Small, short bacteria.

*Growth in colonies*.—Gelatin: Colonies are bluish or nearly colorless; sometimes with a clear blue centre and frosty border. Slightly magnified, they have a straw or light yellow color with a rough surface and sometimes a wheel-like appearance in the centre. The colonies do not spread much. In two to three weeks the colonies liquefy and the gelatin runs down in a thick, cloudy fluid. Liquefaction is always slow, and there is no evidence of it before the second or third week.

Agar: Colonies are large, round, and bluish-white. Under the microscope, a uniform straw color.

*Slab cultures*.—Gelatin: There is a similar slow liquefaction as in the colonies. The surface growth is thick and rough; along the line of inoculation in the depth is a well-developed stalk.

Potato: The culture is dry, yellow with raised surface and defined borders.

*Action on milk and litmus reaction*.—Milk becomes gelatinous in two days at 38° C.; in one or two weeks, a solid coagulum. Milk colored blue with litmus is changed to pink in twenty-four hours; this color gradually fades and is completely reduced in one to two weeks.

*Gas production*.—Occurs in milk, but not observed in potato.

Spores have not been observed.

BACILLUS p.

Found in one case of cholera infantum.

*Morphology*.—Small, short bacilli; when joined in twos they have the appearance of diplococci with pointed ends.

*Growth in colonies*.—Gelatin: The colonies are small, but slightly spread out and nearly colorless. Slightly magnified, the surface colonies are brownish-yellow and granular. In acid gelatin the colonies are very small and coarsely granular.

Agar: The colonies are small, white, round, and spread out. Slightly magnified, they are uniformly pale yellow or straw color.

*Stab cultures.*—In gelatin the growth on the surface and in the depth is delicate and not luxuriant.

In agar stab cultures the growth is more flourishing in the depth along the line of inoculation, but has a very slight surface growth.

Potato: Moist, glistening, straw-colored surface growth.

*Action on milk.*—Milk is coagulated with evolution of gas in forty-eight hours at 38° C. Milk colored blue with litmus is reduced to white in twenty-four hours, with a pink skim on top; the pink color gradually extends to about one-fourth down the coagulum.

*Relation to gelatin.*—Does not liquefy gelatin.

#### BACILLUS *q*.

Found in one case of cholera infantum.

*Morphology.*—Very small bacteria, sometimes showing the polar staining.

*Growth in colonies.*—Gelatin: Colonies are not large, and nearly colorless. Slightly magnified, they have a pale straw color with small round nucleus in the centre. Some colonies have a large, round, yellow central part laid on a white border, giving the appearance of a colony being placed on one a little larger and showing only the rim of the latter. In acid gelatin the colonies are very small.

Agar: Colonies are large, round, bluish-white, or have a mother-of-pearl appearance. Slightly magnified, they have a brownish-yellow color.

*Stab cultures.*—Gelatin: Raised, bluish-white, rough surface growth with a luxuriant growth along the line of inoculation in the depth.

Agar: Luxuriant, moist, white surface growth with well-developed stalk.

Potato: Culture spread extensively over the surface, is straw color or brownish-yellow, and dry; surface not raised above the surrounding potato.

*Action on milk.*—No perceptible change in milk, and milk colored blue with litmus becomes a deeper blue than the control.

*Gas production.*—Not observed in milk or potato cultures.

*Relation to gelatin.*—Does not liquefy gelatin.

Spores have not been observed.

#### BACILLUS 8.

Found in one case of cholera infantum.

*Morphology.*—Small bacilli with rounded ends. In agar, twenty-four hours in the thermostat, many long threads, composed of jointed rods, are seen.

*Growth in colonies.*—Gelatin: Colonies are white, moderately thick, and spread but little. Slightly magnified, they are for the first few days uniform straw color; later, the colonies become lobulated. The lobulated appearance commences in the centre and extends over the whole colony. The color also changes to dark yellow.

Agar: Colonies are white and round. Slightly magnified, they have a light brown color, are not compact, and the borders not well defined.

*Slab cultures.*—Gelatin: Thick white surface growth with well-developed stalk along the line of inoculation in the depth. As the culture grows older it becomes purple; the purple color diffuses a short distance in the upper layer of gelatin just under the surface growth and immediately surrounding the growth in the depth.

Agar: The growth on the surface and in the depth is luxuriant and gives a brown color to the whole tube.

Potato: The culture has a brownish color, dry and raised surface, with defined borders.

*Action on milk and litmus reaction.*—No perceptible change is produced in milk, and milk colored blue with litmus changes but little, if any, from the control.

*Gas production.*—Not noticed in milk or potato cultures.

*Relation to gelatin.*—Does not liquefy gelatin.

Spores have not been observed.



## GENERAL CONSIDERATIONS.

With the sixteen cases reported in the first communication, bacteria have been isolated from the fæces of thirty infants affected with summer diarrhœa, eleven of whom had cholera infantum, fourteen catarrhal enteritis, and five dysentery.

It is not to be supposed that all of the species of bacteria contained in the fæces of each case, and which are capable of growing even upon our present nutritive media, have been separated. The disadvantage of being restricted through atmospheric heat for the greater part of the summer to agar-agar as a separating medium greatly increases the difficulty of separating bacteria. Colonies do not differentiate so widely in agar as in gelatin, especially bacteria which liquefy gelatin. Liquefying colonies are readily distinguished when a colony of the same bacterium in a mixed agar tube may show nothing distinctive.

In the first sixteen cases, consisting of seven of cholera infantum, six catarrhal enteritis, two dysentery, and one simple diarrhœa, agar was the exclusive medium for separating bacteria. Varieties of bacteria which liquefy gelatin were found in only five of these cases.

In the fourteen cases furnishing the material for this article, and consisting of four cases of cholera infantum, seven catarrhal enteritis, and three dysentery, gelatin was used in addition to agar in ten cases, and bacteria which liquefy gelatin were found in seven of these. Liquefying bacteria are thus found more frequently when gelatin is used as a separating medium, and it is probable that if it had been used in all of the cases, liquefiers would have been found more common.

The cases in which liquefying bacteria were found were more serious than those in which they were not found.

By reference to the tables showing the distribution of the bacteria in the different cases, it will be seen that, with the exception of bacterium lactis aërogenes and bacterium coli commune, the two constant or obligatory milk-fæces bacteria, no species of bacteria appear with much constancy, taking the cases as a whole.

If the different forms of diarrhœa are considered separately, in the cases classed under the head of cholera infantum, one

group of bacteria—the proteus group—appears in seven of the eleven cases examined. In the four cases in which no member of this group was found, agar was used exclusively as the separating medium in three cases, and in the other case a number of cultures were lost before being identified. Not being isolated in these cases does not necessarily indicate an absence from the fæces.

During the past summer (1889) bacteria were isolated from the fæces of thirteen children, eight of whom had cholera infantum and five catarrhal enteritis. While the differentiation of all the cultures in these cases has not been sufficiently worked out to incorporate in this report, the proteus bacteria have been identified with certainty in the eight cases of cholera infantum. The addition of these eight cases makes a total of nineteen cases of cholera infantum in which bacteria have been isolated from the fæces, and in fifteen of the cases one or more members of the proteus group of bacteria have been found.

The proteus group is composed of varieties of bacteria having certain peculiarities in common. They have a varying morphology; in gelatin the colonies swim along the surface, producing many different and curious forms, and all of the varieties of bacteria composing this group possess the property of causing putrefaction in albuminous compounds.

Hauser has made a careful study of the proteus group of bacteria, and describes three varieties—viz., proteus, vulgaris, and mirabilis—which liquefy gelatin and blood serum, giving off a specific unpleasant, somewhat putrefactive, cheesy odor, and proteus Zenkeri, which does not liquefy gelatin or blood serum.

The proteus bacteria do not grow in the so-called normal solution and seem to require highly-organic compounds. They are facultative anaërobic, and live in pure carbonic acid.

It is not easy to examine meat entering into putrefaction without finding one or other variety of this group of bacteria, especially proteus vulgaris and mirabilis, which are often found together. Proteus bacteria are found in different putrefactive animal substances, such as putrefactive anatomical preparations, bone maceration, water, ichorous discharges of ulcers, carcinomatous ulcers, etc.

Not only do the proteus bacteria possess in a high degree

the power to excite putrefaction, but, on account of their extension and frequent occurrence, they belong to the most important and ordinary exciters of putrefaction.

In consideration of the almost constant occurrence of the proteus group of bacteria in ichorous discharges of all kinds, and as this has poisonous properties for the animal organism, it is probable that this species of bacteria is of essential importance for the etiology of a class of cases of septicæmia.

In spite of the wide-spread and frequent occurrence of this group of bacteria in the most manifold decomposing animal tissues, they were not found as an accidental impurity in other bacteriological investigations made by Hauser. He also failed to find them in air when gelatin was exposed in the neighborhood of putrefaction. Hauser thinks this may mean that the proteus bacteria lose their germ activity in a completely dried condition, and in dried dust proportionately few vitally active germs are present.

The prominent symptoms of the cases of cholera infantum in which the proteus bacteria were found were drowsiness, stupor, emaciation or great reduction in flesh, more or less collapse, frequent vomiting and purging, with watery and generally offensive stools.

*Proteus vulgaris* was found in the largest number of cases; bacillus A was also frequently found.

Experiments upon lower animals with *proteus vulgaris* and bacillus A gave about the same results.

Bouillon cultures injected into the veins of rabbits caused death in a few hours. There was drowsiness and stupor and finally convulsions in all the animals, and in some diarrhœa, the latter very profuse in two cases.

Cultures injected directly into the intestines of rabbits, when exposed by Sanders-Ezn's method, produced active peristalsis.

Cultures fed to young animals resulted generally in death, and in some diarrhœa occurred.

The frequent occurrence of this widely-spread group of putrefactive bacteria in the most serious cases of summer diarrhœa, in which toxic symptoms are more or less prominent, cannot be without significance.

With one exception, in cases of diarrhœa free from toxic



symptoms no member of this group of bacteria has been observed, nor were they found by Escherich in the healthy fæces of sucklings.

Another species of bacteria which liquefies gelatin—bacillus *a*—was found in large quantity in three cases of cholera infantum and one fatal case of dysentery. In two of the cases of cholera infantum proteus vulgaris was also found. These two cases were especially grave and had decided stupor, one for two days, the other seven days.

Bacillus *a*, like the proteus bacteria, was not observed in any of the milder cases of diarrhœa. It liquefies gelatin rapidly and appears identical with a bacillus found by Sternberg quite frequently in the fæces of yellow fever patients in the recent epidemic of this disease in Decatur, Alabama.

In experiments upon rabbits with bacillus *a*, death occurred in a few hours when injected into the ear-vein, being preceded by drowsiness and stupor and finally convulsions. When injected directly into the intestine by Sanders-Ezn's method active peristalsis was produced.

No variety of bacteria appeared to be especially associated with the cases of catarrhal enteritis and dysentery.

The fæces in catarrhal enteritis often contain an enormous quantity of bacteria, chiefly varieties of colon bacteria and bacterium lactis aërogenes with a number of inconstant varieties. Some of these bacteria have a decided action on milk, producing coagulation with evolution of gas; others appear to peptonize milk without coagulating it.

Bacteria which liquefy gelatin were found in only a few of these cases, and no liquefying variety was observed in more than one case.

The two obligatory milk-fæces bacteria do not appear so constantly in the dysenteric as in the diarrhœal fæces. Bacterium lactis aërogenes was found in three cases, and a supposed variety of the colon bacteria appeared as the predominating form in two cases. The dysenteric discharges do not contain as great a number of varieties or of individual bacteria as the diarrhœal fæces.

A comparison of the tables shows that the inconstant bacteria not only vary in different cases, but also with different

summers. The bacteria in Table I. were separated in the summers of 1886 and 1877. These bacteria do not appear among the bacteria in Table II., which were separated in the summer of 1888.

No chromogenic bacteria have been isolated. Esmarch tubes, made from a large number of green stools, developed no green colonies.

In conclusion, it must be understood that this work is too incomplete to admit of positive conclusions, and that it refers to the examination of but a limited number of cases in which not even all the bacteria capable of being cultivated on our present nutritive media are supposed to have been separated, and those separated have been but imperfectly studied.

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Dr. Thomas presented, for Dr. Osler, a brain showing dilatation of the ventricle; a brain showing local sclerosis; a case of palsy of the left arm with atrophy.

Dr. Caillé moved that the thanks of the Society be extended the President for his untiring efforts in behalf of the successful meeting which had been held.

Carried.

Dr. Earle moved the thanks of the Society be tendered to the Committee of Arrangements and to the management of Johns Hopkins Hospital for courtesies extended.

Carried.

THE PRESIDENT.—I have been exceedingly well pleased with the results of this meeting. I had made very little preparation for it, as I was anxious to see how much spontaneity there would be in the preparations on your part. I have been waiting for offers of papers, and I have not been disappointed. As I said in my inaugural address, I have never been more satisfied than I am at this present time of the necessity for such a society, after I have seen how general the interest in it has proved to be.

You have had a number of papers before you, and they have been well discussed. We have had a number of discussions which I think the profession at large will appreciate when they see them in print.

It is I who have to thank you for the honor conferred upon me. Certainly it is an honor to be the first President of a Society which has been able to do so much. I expect that in the future this Society will do much both for the medical profession at large and for the public, which has to depend so much upon the accomplishments and services of the profession.

What we have to be thankful for is the kindness with which we have been received and the opportunity which has been given us by the authorities of Johns Hopkins Hospital to hold our meeting here and to see the institution.

Adjourned, subject to the call of the Council.

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## Clinical Memoranda.

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### SCARLET FEVER.

A LECTURE DELIVERED TO THE STUDENTS OF THE HARVARD  
MEDICAL SCHOOL.

BY T. M. ROTCH, M.D.,

Assistant Professor of Diseases of Children, Harvard University; Physician to the  
Boston City Hospital and to the Children's Hospital, Boston.

(Continued from February Number.)

WE have now to disinfect the room itself. This is a very difficult matter to do absolutely, but there are certain methods which are far preferable to the usually recommended fumigation by sulphur, which has been so generally used for this purpose during the past century. I merely speak to you of sulphur as a disinfectant to tell you that it has been proved, as long ago as in 1881, by Koch, to be entirely unreliable, and that it should be looked upon as a relic of past ignorance, notwithstanding that its use is still recommended, and in fact enforced, by certain boards of health. If there is paper on the walls, it had much better be thoroughly scraped off, and immediately burned.

The floor is then to be thoroughly wet with carbolic acid,



five per cent., and then the ceilings, walls, all the wood-work and furniture are to be thoroughly rubbed with bread, which Esmarch has shown to be the best method for removing infectious material from surfaces of this kind. The micro-organisms adhere with great tenacity to the bread, which, with any crumbs which break off and fall to the floor, must be carefully collected and destroyed by fire.

The room should then be thoroughly aired for several days; and I always advise the family, if there are other children in the house, to have the whole room, including the ceiling and floor, painted. You must also bear in mind that you yourselves, by means of your hair, beard, clothes, etc., are the possible means of transmitting the contagium from one patient to another, and that it is your manifest duty towards the public to change your clothing and disinfect yourselves on leaving a scarlet fever patient.

The following case, the notes of which I find in my records, will, I think, serve to impress upon you the characteristics of a mild case of the benign type of scarlet fever:

A boy, four and one-half years old, was noticed by me, when I was vaccinating the baby of the family, to be quite sick. Besides the baby, the boy's two brothers—one two and a half years old and the other six years old—were in the room with him. The mother supposed that the boy had indigestion. The child was vomiting quite frequently, had no appetite; pulse 120; temperature 101° F.; no headache; no sore throat; slight redness of the fauces. He was placed in an upper room of the house and completely isolated. The vomiting continued until evening, when it stopped, and did not return. He had a restless night. This was November 6. On November 7 his throat was found to be more reddened and a little sore; pulse 135; temperature 101° F. There was a natural movement of the bowels. The appetite was poor. He was placed on an absolutely milk diet, and given as much water to drink as he wished. A scarlet fever efflorescence was found on the chest. November 8, the efflorescence was found to have spread all over the body. He had slept well and had vomited his milk once. Pulse 125; temperature 100° F.; inunctions of vaseline and sponging with water at 90° F. The temperature of the room was kept at 98° F. November 9, the efflorescence had spread on to the face and limbs. At 6 A.M. pulse 120; temperature 98° F. At 6 P.M. pulse 120; temperature 99° F.; a

little more appetite ; throat less reddened and not troublesome. November 11, efflorescence beginning to fade ; pulse 110 ; temperature 99° F. November 13, the temperature became normal and desquamation began. November 25, the desquamation had almost ceased, and the boy was allowed to get up and play about the room for an hour. December 1, began to desquamate freely again. December 8, desquamation ceased, and he was taken down-stairs. Went out of doors December 25. No albumen was detected by nitric acid test in patient's urine during the whole course of the disease. The boy began to resume his usual diet December 10.

None of the other children contracted the disease, although two of them remained in the house while their brother was sick. The following cases will be interesting to you as examples of the scarlet fever contagium controlled by treatment, and the contagiousness of measles :

A boy in the general ward of the Children's Hospital was taken sick with scarlet fever and was placed in the isolating ward. Three weeks later he was in the stage of desquamation, and from the very beginning of the attack he had been thoroughly rubbed twice a day with vaseline and washed twice a day with corrosive sublimate solution (1 to 10,000). At this time the boy, who had occupied the bed next to the scarlet fever case in the general ward, was taken sick in the afternoon. I had already paid my visit for the day, and so my house officer, thinking the case to be also one of scarlet fever, on his own responsibility, had the boy placed in the room with the first case. In the morning I found that the second case was one of measles. I immediately had the measles case removed to a separate room, and had it watched carefully for a week, supposing that it had contracted scarlet fever from the first case, having passed a whole night and part of a day in the same room with a desquamating scarlet fever patient. The measles case never contracted scarlet fever, the scarlet fever nurse apparently having most efficiently kept the contagium under control ; but promptly in just ten days from the introduction of the measles patient into his room, the scarlet fever patient came down with measles.

Now we may have great variations in the benign form of scarlet fever. The evening fever sometimes continues for over a week after the efflorescence has faded without the existence of any ascertainable cause. Again, after a rapid increase of temperature, at the beginning of the disease, there sometimes

ensues a condition of complete apyrexia, while all the other symptoms continue to develop in the usual manner. Scarlet fever may at times relapse, the temperature becoming normal at the usual time, and remaining so for perhaps a week, and then another attack may appear and run the usual course. Convulsions occurring at the onset of the disease are of no especial significance, but occurring later are usually of serious import. Scarlet fever may begin with such great cerebral excitement as to lead us to suspect meningitis, and the diagnosis not be cleared up until the efflorescence appears, which may not occur until the eighth or ninth day. The efflorescence may last only twenty-four hours, and again so long as fourteen days. The appearance of articular rheumatism during scarlet fever is not especially rare. In the majority of cases it is a synovitis, and at the same time there are often inflammations of the other serous membranes, notably the endocardium. The occurrence of scarlet fever in surgical cases is of no especial significance, beyond the apparently greater susceptibility of patients with open wounds to contract the disease. When the temperature remains heightened at the end of the period of efflorescence, and continues into the period of desquamation, especially if there is no local pain anywhere, we should suspect a fulminating nephritis. Where the temperature, having become normal, rises again, we should suspect such complications as otitis and suppuration of the subcutaneous tissues of the neck, which at times results in gangrene.

We will now, gentlemen, say a few words concerning the organs affected as part of the disease and the most common complications. I have already described somewhat in detail the appearances which one found in the throat in the prodromal period. We usually have an intense pharyngitis; this at times is accompanied by a severe catarrhal tonsillitis. In the more severe forms of the throat affection there is an exudation which simulates somewhat that which we meet with in diphtheria, and this in connection with a discharge from the nares, caused by an extension of the inflammation to the naso-pharynx, has frequently led physicians to make a diagnosis of diphtheria. True diphtheria may be engrafted on a scarlet fever throat, and is a very dangerous complication of the disease;



but it is simply an accident, and must be diagnosticated separately from the scarlet fever, and treated as you would treat any case of diphtheria. The treatment of the scarlet fever throat is to be especially directed, not only to allaying the temporary discomfort of the pharyngitis with ice and cold applications, but also to the prevention of the inflammatory process extending through the Eustachian tubes to the tympanum, and possibly setting up a meningitis, by the close vascular connection which exists in childhood between the meningeal blood-vessels and the vessels of the tympanum, through the open petro-squamosal suture. Atomizing thoroughly the throat and nose with alkaline solutions several times a day is a useful procedure. Unfortunately, however, we are but too often baffled in our attempts to treat the nose and throat in children with acute diseases.

Where a purulent otitis has been set up we should treat it as we would an ordinary otitis, always bearing in mind, however, that the otitis of scarlet fever is peculiarly destructive and slow to recover. No time should be lost in puncturing the membrana tympani, where there is bulging or where there are symptoms of cerebral pressure, for it is of the greatest importance that there should be a free exit for the pus during the acute stage of the disease.

I remember well seeing, in consultation, a young child with scarlet fever and a complicating purulent otitis, who was in a state of stupor, apparently induced by pressure resulting from an insufficient pin-hole opening in the membrana tympani of both ears, and yet the pus was flowing in large amount from the external meati. As an example of one of the more severe scarlet fever throats, complicated by otitis, I will shortly report one of my cases.

A boy, two and a half years old, was seized, December 4, with diarrhoea, vomiting, and sore throat. The tonsils on December 5 were found to be enlarged, and the whole throat much reddened. A scarlet fever efflorescence appeared on the chest, and the child seemed dull and sick. Temperature  $104^{\circ}$  F.; pulse 150. December 6, both sides of neck much swollen and tonsils much enlarged. December 7, considerable muco-purulent discharge from the nose. Temperature  $103\frac{1}{2}^{\circ}$  F.; pulse 150. Not so dull. Efflorescence well out all over body.

December 8, diarrhoea continues; temperature  $103^{\circ}$  F.; pulse 150. Takes milk, but refuses to have anything done to throat or nose. September 10, no especial change in symptoms, excepting that the diarrhoea is less and the throat and nose rather worse. Much grayish-white exudation in mouth and throat, easily removed by wiping out with a handkerchief. Neck on both sides swollen and hard. Pulse rather weak,—140,—so that it was deemed wise to give brandy,—twenty drops every two hours. Takes milk well. December 11, less hardness and swelling of neck; less discharge from nose; pulse 150; temperature  $103^{\circ}$  F. Efflorescence fading. December 12, much exudation in mouth; takes more milk; pulse 150; temperature  $103\frac{1}{2}^{\circ}$  F. Desquamation has begun. December 13, temperature  $102^{\circ}$  F.; pulse 150; cries a great deal and is very restless; neck much less swollen; complains of pain in joints. December 14, vomited twice in the night. December 15, there has been no albumen in the urine; pulse 135; temperature  $101^{\circ}$  F. December 18, temperature  $100^{\circ}$  F.; profuse flow of saliva; breathes as though the throat and posterior nares were considerably occluded. December 20, pulse 150, of better character; temperature  $99^{\circ}$  F.; a natural movement of bowels; brandy omitted; seems much brighter; throat less troublesome; at times rheumatic pains in legs quite severe. December 21, temperature  $98^{\circ}$  F.; pulse 148; herpes on lips and face; considerable discharge from nose. December 23, both tonsils much enlarged and of a deep red. The temperature then remained normal, and the child rapidly improved until December 28, when pain was complained of in the left ear, and some hours later perforation of the membrana tympani, and a slight muco-purulent discharge. December 29, injections of lukewarm water ordered for both ears, as the right ear was also discharging. Urine contains a faint trace of albumen. Specific gravity  $1013\frac{1}{2}$ . The sediment was small and consisted of small, round, renal epithelium, mucous casts, and an occasional hyaline cast; in fact, showing a condition of hyperæmia. The case from this time went on well. The temperature remained normal. The swelling and hardness of the neck entirely subsided. The albumen and casts disappeared from the urine, and the ears gradually recovered without resulting deafness.

In this case the child resisted all attempts at treatment so strenuously that little was done beyond cleanliness and the administration of milk and brandy. I have spoken somewhat at length, in the earlier part of this lecture, concerning the forms of nephritis which occur in scarlet fever, and the

significance of albuminuria in the different periods of the disease. What I hope to have impressed upon you is, the great importance of detecting, by means of frequent analyses of the urine, the beginning of either the mild catarrhal nephritis or the distinctive glomerulo-nephritis. If carefully watched for, the appearance of albumen will almost always precede the clinical symptoms, and by means of a still more rigid enforcement of the rules which I have laid down as practically governing the treatment, the further development of a beginning nephritis may be prevented or at least rendered much less pronounced. It is quite frequently the case that suspicion is first aroused of the presence of a nephritis by œdema of the face, especially about the eyes, most commonly occurring during the period of desquamation,—from the eighteenth to the twenty-fourth day; the urine will then be found to be diminished in quantity and to contain albumen. The daily amount of urine may be reduced as low as one hundred to two hundred cubic centimetres.

The microscopic examination of the urine does not differ materially from other forms of nephritis, excepting, possibly, that fatty casts are less numerous, owing to there being less fatty degeneration of the renal epithelium. The earlier, in the course of the disease, the symptoms of nephritis appear, the—as a rule—more serious will be the type of the nephritis. The extent of the albuminuria present is of less consequence than the total quantity of the urine; rapid and extended diminution of the urine being most ominous as indicating the accumulation of nitrogenous waste in the blood and danger of resulting uræmia. When albumen occurs early in the disease it is more apt to be in large quantities than when it begins in the third or fourth week. Hæmaturia is frequently pronounced, and especially occurs during the third or fourth week of the scarlet fever. Ordinarily of itself it adds but little to the gravity of the disease.

The œdema of the face may rapidly extend to the ankles and legs, and at times becomes general. During the presence of a general œdema the desquamation is apt to cease and to return on its disappearance. The œdema may last for many months or may pass away quickly; it may be entirely absent,



but in such cases the nephritis is almost invariably of a light grade. At times, during the presence of a general œdema, serous effusion into the pleura and pericardium may occur, proving rapidly fatal; œdema of the lungs and brain, though rather rare, may also occur.

Instead of the nephritis developing slowly, and beginning with œdema of the face, we may have an acute attack ushered in by fever, vomiting, headache, delirium, amblyopia, coma, and convulsions. In nephritis with this class of symptoms the urine will be completely or partially suppressed; but even in this case do not lose your heads and despair about saving the child, as the worst cases of this class may recover with active treatment. Relapses may occur many weeks after an attack of scarlatinal nephritis, and we should therefore follow up the case with great care.

I have already told you that very little treatment beyond hygienic is needed for the mild uncomplicated cases of scarlet fever. This can hardly be said of the cases that are complicated with the severe forms of nephritis, for here we must act promptly and with great judgment. We should be careful about using diuretics which might irritate the kidney. Acetate of potash is one of the safer diuretics in this respect. In the lighter cases,\* a lemonade made with bitartrate of potash will be taken well, and often quickly increase the quantity of urine, reduce the œdema, diminish the albuminuria, and cause a radical change for the better. This lemonade may be made by adding one drachm of cream of tartar to a pint of boiling water, into which a lemon cut into thin slices has been dropped. This quantity, a little sweetened, may be drunk in twenty-four hours by a child five years old. In severe cases, with general œdema and threatening uræmia, cathartics are rather more certain in their action than diaphoretics and diuretics, and are especially indicated where—as is usually the case—constipation is present. Podophyllin in doses of one-tenth of a grain may be given to a child five years old, and repeated a number of times; it usually acts quickly.

Having provided for the proper action of the bowels, if the

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\* Atkinson, *Amer. Journ. Med. Sciences*, July, 1886.

skin is hot and dry and uræmic symptoms still threatening, the hot pack should be applied, either wet or dry, by means of enveloping the whole body in flannel from the feet to the chin, and the muriate of pilocarpine, one-twentieth of a grain, should be given by the mouth to a child of two years, and subcutaneously (if desirable) in the same dose to a child of five years. Enemata of chloral are of value in controlling the convulsions which at times suddenly appear in these cases. Where the ascites is extreme paracentesis abdominis is often not only of great value in relieving the immediate symptoms of pressure, but also in furthering the action of the diuretic, which perhaps before was not acting freely. Digitalis is a valuable remedy especially adapted to the treatment of scarlatinal nephritis, and to that of the cardiac changes which result from it. Digitalis not only increases the force of the blood-current, but it is also a powerful vaso-constrictor of the arterioles and vessels of the glomeruli; in this way the flow of urine is increased and at the same time the hæmaturia—which I have already spoken of—checked. The digitalis is best given in the form of a fresh infusion, in teaspoonful doses, every four hours to a child five years old. It may, in a general way, be said that the nephritis of scarlet fever, although it may last for months, has a tendency to ultimate recovery, also that the uræmia of scarlet fever nephritis is less fatal than that from other forms. Retinitis and amaurosis, at times, occur during the progress of scarlet fever nephritis.

The alterations, already spoken of, in the glomeruli account not only for the anuria and uræmia, but also for the obstruction of the renal arteries, for nearly all of the renal arterial blood has to first pass through the glomeruli. We find in fully one-third of the cases of glomerulo-nephritis a rapid hypertrophy of the left ventricle. This cardiac complication is not to be confounded with the endocarditis which I have already spoken of as secondary to the scarlet fever and caused by its poison; it is, in fact, not the result directly of the scarlet fever, but is secondary to the nephritis, and in this sense tertiary to the scarlet fever. We therefore do not find this acute cardiac hypertrophy in the early stages of scarlet fever; but when a glomerulo-nephritis is once established, it may take

place in as short a period as a week. This rapid hypertrophy has usually been observed in children between the ages of three and six, which is of some significance in explaining why this hypertrophy should take place so easily. If you will recall what I have already told you in my lectures on development, you will understand that, as between the ages of three and eight years, a physiological hypertrophy of the heart exists, probably caused by a continuance of the aortic narrowing in the neighborhood of the ductus arteriosus; the heart will be more readily affected by increased blood-pressure at that age.

Besides the hypertrophy, we may at times have an acute dilatation of the heart in these cases. This is a serious complication which must be guarded against, and when it happens be recognized at once.

These cardiac complications may, and very frequently do, recover completely, as it is seldom that any extended changes in the heart muscles take place.

I have told you, gentlemen, in the beginning of this lecture, that there were two distinct types of scarlet fever, and I have spoken at length of the benign form with its various complications and its, on the whole, favorable prognosis. I shall have but a few words to say of the malignant form, for it is almost without exception fatal, and is rare in comparison with the benign form. It appears to attack those individuals who have a predisposition to be profoundly affected by the ordinary scarlet fever contagium.

A perfectly-healthy child is attacked with intense headache, high fever, delirium, sometimes coma, and usually dies in two or three days. As a conclusion to the lecture, I will narrate to you the chief points of a case of malignant scarlet fever, which I find among my notes on the disease.

January 11 I was called in consultation, to see a child eleven years old, in a gentleman's country house, where, so far as could be ascertained, the drainage and ventilation were good. The child did not feel well on the morning of January 10, and in a few hours felt very ill and vomited repeatedly. Pulse 150; temperature  $104\frac{1}{2}^{\circ}$  F. The pharynx and tonsils were much reddened. A slight scarlet fever efflorescence appeared on the chest in the afternoon. January 11, 7 A.M., vomiting has continued. Patient conscious but dull; pulse



150; temperature 105° F. At 4 P.M., face puffy; well-marked efflorescence; wandering; stupid; temperature 108° F., reduced by cold sponging to 104° F.; extremities livid; vomiting continues. At 6.30 P.M., temperature 107° F.; 10 P.M., temperature 106° F.; pulse 160, small and hard to count. Died at 6 A.M., January 12, forty-eight hours from the appearance of the first symptoms. The case was a perfectly hopeless one from the beginning, as every method of treatment which we could think of was tried and proved absolutely fruitless.

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## A CLINICAL LECTURE.

BY OLIVER P. REX, M.D.,

Clinical Professor of Pediatrics in the Jefferson Medical College, Philadelphia, Pa.

CASE I.—A child, four years old. Excepting spasms, which accompanied the eruption of the teeth, he has had no illness since birth until six months ago. He has been ailing since April. Appetite is poor in the morning, but ravenous at night, fruit, rice, and other starchy articles being preferred, which is not an uncommon thing with young children. There is phthisical history on the mother's side, and this, indeed, is strongly suggested by the pearly conjunctiva, so frequently found in children with such hereditary taint. This child eats ravenously at night to make up for the loss of food in the morning, and we find that he sleeps poorly and often starts out of sound sleep in a paroxysm of fright,—the so-called "night terrors." He also has a cold which began in his head and crept down to the lungs, now of several months' duration. There is moderate cough, but no expectoration. It must be remembered, however, that the act of expectoration is an acquired habit, which children do not learn until five to seven years old, previous to which the sputa are brought only to the top of the larynx and are then swallowed. This is an important fact when the gastro-intestinal mucous membrane is weak or diseased. The urine here is said to be very dark and more frequently passed when he has a cold. At night he occasionally wets the bed. He has a tight prepuce, which, by transmission of irritation to the bladder, causes enuresis. In some children this may be the sole cause of convulsions and other alarming symptoms, simulating inflammation of the brain. In children of phthisical inheritance we find especially catarrhal weakness in the mucous membranes. A slight cold in the head, or a slight catarrhal laryngitis or bronchitis, is of frequent occurrence.

Proceeding now to physical examination, we find it most difficult to auscultate the lungs of children. They will not take a deep, long breath. But we know from the history here what we shall find: only the large tubes are involved, and therefore large mucous râles are heard, especially at the bifurcation of the bronchi. Percussion in children differs from percussion in adults in this respect, that, while at one examination there may be an area of dulness, a clear note may be elicited over the same area a few hours later. This curious condition is supposed to be due to irregularity in expansion of the lung structure, parts of which seem, as it were, to rest while other parts carry on the respiratory work. Consequently, in percussing in the case of a child, more faith is to be put in the sense of resistance as imparted to the finger than in the sounds elicited. With dulness and increased resistance the pitch is high. Auscultation is invaluable, but varies sometimes from the rules applying to adults. A pleural effusion in a child may give the signs which in an adult would indicate a consolidation. Local fremitus is not of much importance on account of the high pitch and feebleness of the voice; but if this method can be employed, the indications in the differential diagnosis between solid and fluid effusions within the chest are more reliable than those obtained from auscultation.

This child, then, has bronchitis and gastro-enteritis. As regards treatment, diet is very important. No sweets or starchy matters should be allowed. Limit him to eggs, milk, and meat. Whether the irritation of the gastro-intestinal tract is catarrhal or due to worms, the key of success is the treatment of this mucous membrane. If he won't eat, feed him upon albumen water, made by dissolving the white of one egg in one pint of freshly-boiled water, sufficiently cooled; or boil the egg very hard for fifteen minutes, chip up the yolk very finely, season, and use with bread. If he refuses meat, strong broths may be acceptable. We also know that his bronchial mucous membrane is in a state of inflammation, and here it is often necessary to promote cough. Dr. J. Lewis Smith thinks that the ammonium preparations do as much good by producing cough as by their effect on secretion. Walsh says

that they have a double alterative action, increasing secretion when scanty, and diminishing it when profuse. We will therefore give this boy the following :

R Ammon. muriat., ʒi;  
 Syrup. senegæ, fʒss;  
 Tr. opii camphorat., fʒi;  
 Syrup. tolutan., fʒss;  
 Aquæ gaultheriæ ad., fʒii.

Sig.—Teaspoonful every two hours.

CASE II.—A child, twenty months old. He has had a cold since April. Causes apparently very trivial may explain colds of this sort. The child, probably asleep, is taken out of bed and carried to the door. The warm, relaxed bronchial mucous membrane is at once chilled and congested. A child washed immediately after birth in water too cold has been known to have contracted a cold which has lasted for years. It is a wise precaution not to wash new-born babies immediately after birth, but to anoint them with sweet oil. This softens the vernix caseosa, and can then be washed off after twenty-four hours. The babe coming abruptly from the blood-heated maternal tissues into the cold atmosphere is in an exceedingly weak and susceptible condition.

From one cause or another this child was seized with bronchial inflammation which has kept up until it is now a chronic bronchitis. In auscultation of infants have the mother stand up and hold the child against her breast ; this keeps it quiet and prevents flinching. There is a good percussion note posteriorly, but there are sonorous and sibilant râles of a soft, cooing character. This condition would be very simple in a child if only the larger tubes were involved, but there is always a tendency in acute inflammation to spread downward to the finer divisions of the bronchioles, and, consequently, this is one of the most dangerous diseases in children in the first or second year. Often in less than twenty-four hours it may be found beyond relief. In all bronchial inflammation look early to treatment. Many cases, if seen in the first twenty-four hours, when there is elevation of temperature, acceleration and fulness of pulse, and a little cough, can be promptly cured. A good hot bath, with an active emetic, is most effectual. In old times leeching was done, but more confidence is to be placed in purging the bronchial tubes and



acting on the skin. What is needed here is a stimulating expectorant and a profound alterative, and we will give—

R Potass. iodid., gr. i;  
 Ammon. muriat., gr. ii;  
 Vini ipecac., ℥ii;  
 Syrup. senegæ, ℥x;  
 Tr. opii camphorat., gtt. ii;  
 Syrup. acaciæ, gtt. xx;  
 Aq. menth. piperit. ad., fʒi. M.

Sig.—Teaspoonful every three or four hours.

The combination of potassium iodide and ammonium muriate makes an extemporaneous ammonium iodide, and the quantities of either salt uncombined can be varied. The chest and back are to be rubbed night and morning with linimentum ammoniæ. He is to be kept protected at night by a flannel or cotton flannel night-shirt and drawers.

CASE III.—A child, five years old. Family history is good. He has been well and thriving till two months ago. Since then he has had cough and expectoration. Sleep is restless and disturbed, and he has lost flesh. Food consists of milk, toast, and cracker. The tongue is good. This is a symptom of importance often when the stomach is in good order, as swollen tonsil or relaxed pharynx will cause a little coating at the root of the tongue, as a decayed tooth or other local irritation may cause irregular coating of the tongue in the adult. The pulse should always be felt. At birth and until the first month the pulse is about 150, and then gradually decreases to about 90 at two years, 80 at five years, and 70 at ten years. A child's pulse and respiration can never be accurately taken except when asleep. At birth the respirations are 25 to 30.

The adult pulse-respiration ratio of four to one does not obtain in the child, but during sleep this ratio is nearly approached.

Here the pulse is 96. There are small and large mucous râles anteriorly and posteriorly in all parts. There is therefore a subacute bronchitis. Always examine the throat and lungs when you have a childish disease. A catarrhal tonsillitis may cause symptoms simulating brain trouble. This child will do well on half a fluidrachm of cod-liver oil three times daily, increasing gradually. Children take the pure oil much better than the emulsion, and soon become very fond of it.

## NEW YORK ACADEMY OF MEDICINE.

## SECTION ON PEDIATRICS.

*Stated Meeting, December 12, 1889.*

J. LEWIS SMITH, M.D., *Chairman*; A. CAILLÉ, M.D., *Secretary*. (Reported by R. C. SHULTZ, M.D.)

DR. A. CAILLÉ showed a sample of sterilized milk, which is now for sale in bottles in New York City.

DR. B. SCHARLAU presented a boy with

## POLYENCEPHALITIS.

He was seven years old; had measles several years ago, but no other diseases; never suffered from headaches. In April last, according to the story of the mother, he was suddenly affected with loss of power in the right arm, somewhat less marked in the right leg. During the first two days of the attack he could not speak intelligently. He at no time had complete loss of consciousness. After a few days the reaction was sufficient in the leg to permit of walking, but the leg dragged. The arm hung powerless by the side. There was some twitching of the muscles, which became more marked until he was admitted to the hospital, at which time it had resolved itself into most marked choreic movements. The boy was then well nourished; physical examination of the chest and abdomen negative. Contractures of the right arm and leg were very marked. In the case of the arm, the contracture would begin in the flexors of the fingers, extend up the muscles of the arm, twisting it, drawing it backward and upward, until the hand nearly touched the occiput. The boy was unable to walk for a time because of the involuntary contraction of the muscles of the leg. The right facial nerve was affected slightly. All the muscles reacted promptly to the faradic current. He remarked that the early history of the case, given by the mother, was not wholly reliable. His diagnosis was polyencephalitis. The treatment had consisted in rest in bed, good nourishment, occasional immobilization of the right

arm, later by massage and electricity. After some weeks the patient had gained sufficient control over the leg to walk about, and the arm was no longer drawn over behind the back. The prognosis of these cases, when they did not come to a complete recovery, was very doubtful, as it was in this one.

DR. A. JACOBI called attention to the fact that after a time it became difficult to tell just how far one had to deal with a genuine contracture or only the result of predominance of the flexor muscles over the extensors. In the present case it was evident the movements were partly choreic; they occurred not only involuntarily, but were made worse when the boy attempted voluntary use. He agreed with Dr. Scharlau that the case was certainly cerebral, not spinal.

DR. L. EMMETT HOLT read a paper on

THE ANATOMICAL CHARACTERS AND NOMENCLATURE  
OF THE DIARRHOEAL DISEASES OF INFANCY,

of which the following is an abstract: There was, he said, no more difficult task in medicine than the classification of diseases. Increasing knowledge of the etiological factors and anatomical changes continually required us to group anew our cases. It would be a great advantage in many instances if we could wipe out the old and start with a clean slate. Widely varying notions were held by different men regarding diarrhoeal diseases in young children. One physician set down all deaths from infantile diarrhoea as due to cholera infantum; another saw in every similar case enterocolitis; to another a large number appeared as dysentery. Over two years ago Dr. Holt began a series of observations upon the pathological anatomy of the diarrhoeal diseases in young children, some of the results of which were presented. Microscopical examinations were made upon the intestines of one hundred and nine cases, seventy of which were from cases dying of diarrhoeal diseases or complications. Most of them were taken consecutively from one institution,—the New York Infant Asylum,—where nearly every case came to autopsy. The scheme of classification presented was made up chiefly from a study of the clinical and pathological features of these seventy cases, but modified by



comparison with upwards of fifteen hundred non-fatal cases of diarrhoea in children.

A classification based solely upon the pathological findings, he said, would become complicated and needlessly confusing to the clinician. He had tried to solve the difficulty by placing in the left-hand column the best grouping of the cases clinically which he had been able to make, and to show the relations of these to the pathological conditions which were arranged in the right-hand column. It was to be borne in mind that it was not put forth as a final classification, for there were yet many obscure points, especially in etiology, in which experimental bacteriology alone could decide.

Simple diarrhoea; no lesions.		Seventy cases of diarrhoeal diseases examined microscopically (tuberculosis excluded):	
Acute mycotic.	{	Acute dyspeptic diarrhoea (acute desquamative catarrh) and cholera infantum.	Acute desquamative catarrh . . . 22
			Acute catarrhal enterocolitis . . 16
			Acute croupous enterocolitis . . 9
Enterocolitis.	{	Catarrhal.	
		Croupous.	
		Follicular ulceration (ulceration of the lymph nodules).	Follicular ulceration . . . . . 20 Chronic enterocolitis . . . . . 3
Chronic diarrhoea.	{	Dyspeptic (hyperplasia of lymph nodules or no lesions).	Twenty cases of follicular ulceration:
		Inflammatory (chronic enterocolitis, catarrhal or follicular).	Site, ileum . . . . . 2 " ileum and colon . . . . . 3 " colon only . . . . . 15 Blood in stools, much . . . . . 2 " " " traces . . . . . 4 " " " none . . . . . 14

I. Under simple diarrhoea were included those cases not accompanied by fever, and which were not dyspeptic. There

was functional derangement, chiefly exaggerated peristalsis. There were no anatomical changes. In some cases it was likely there was hyperæmia.

II. Acute mycotic diarrhœa, or the cases which were probably of bacterial origin. He said probably, for it had not yet, he thought, been demonstrated that any known form of bacteria stood in a direct causative relation to any one of the varieties of diarrhœa. These cases embraced most of those known as summer diarrhœa. They included acute dyspeptic diarrhœa and cholera infantum. The first was characterized by an abrupt invasion, usually with vomiting, a considerable elevation of temperature,—100° to 104° F.,—and by thin or watery stools containing undigested food, generally passed with much flatus. Vomiting and fever continued only from twenty-four to forty-eight hours, and with favorable conditions the child was usually convalescent in two or three days, or it might become a case of chronic dyspeptic diarrhœa or enterocolitis.

Cholera infantum was rare. He limited the term, as did Dr. J. Lewis Smith and others, to cases of true choleraic diarrhœa. As he had met them they showed profuse vomiting and purging, the stools finally becoming serous in character; very great prostration, highly-developed nervous symptoms, delirium, coma, or convulsions, and hyperpyrexia; the temperature rising in a few hours to 104° or 105°, often touching before death 107° or 108° F. Death usually within thirty-six hours. They formed but about one or two per cent. of diarrhœa seen in summer.

Turning to the lesions found in the seventy cases, twenty-two of them belonged to the group classified as acute mycotic diarrhœa. Of these four were true cholera infantum, eighteen acute dyspeptic diarrhœa, of which thirteen were in children suffering previously from athrepsia or marasmus. He was unable by the microscope to separate the cholera infantum cases from the rest of the group, which, however, did not prove identity, but only that the differences were clinical and probably also etiological. The only essential and constant change in these twenty-two cases was desquamation of the superficial epithelium. The study of the bacteria in the tissues had thus

far been rather barren of results. He thought these cases should be distinguished from those of gastro-enteritis, or gastro-entero-colitis, in which all the usual evidences of an exudative inflammation were found. The process appeared to him as one of acute decomposition or fermentation in the alimentary tract, involving nearly the whole of it. The symptoms, too, appeared to be toxic.

Under the head acute entero-colitis he grouped all the acute cases in which there was not only loss of epithelium but also an inflammatory exudation of cells and fibrin. They were distinct clinically from the foregoing, characterized by a much longer course, and continuance of severe symptoms, particularly fever. It was a rule to which there were few exceptions that where there was continuous fever, with diarrhoeal diseases, lesions were present, and their extent and severity were usually in direct proportion to the intensity and duration of the febrile symptoms.

The nature of the lesions met with in acute entero-colitis and their relative frequency were as follows: Acute catarrhal inflammation, sixteen cases; acute croupous inflammation, nine; follicular ulceration, or ulceration of the lymph nodules, twenty.

The first was divided into the mild and severe forms, of which the pathological differences were given. The severer form resembled croupous inflammation except in the absence of fibrin, and was probably nearly always fatal. Acute croupous inflammation was probably the most intense inflammatory process seen in the intestines. It affected with great uniformity the whole colon, though not uniformly, and the lower two or three feet of the ileum. It usually stopped quite abruptly. The amount of fibrin on the surface was usually small; it more commonly appeared as fine granules of a gray or yellowish-green color; in some the intestine was red and granular, and nothing suggested a pseudo-membrane. There was no deep sloughing, and rarely any ulcers at all, contrasting with the croupous process observed in adults. The intestine always appeared greatly thickened. Like in the severe variety of catarrhal inflammation, there were extensive destruction of the tubular glands of Lieberkühn, dense cell-infiltration into the mucosa, submucosa, and some-



times even the muscular coats, and in addition a fibrinous layer upon the surface and fibrinous infiltration into the walls. The patients usually died within ten to fourteen days.

Ulceration of the lymph nodules seldom existed without other evidences of inflammation, usually of the catarrhal variety; they usually ran a slower course than the catarrhal and croupous varieties. The average duration was between two and three weeks. These ulcers were found in twenty-one of the seventy cases; of those lasting over two weeks they formed rather more than half the cases. They were most common in the colon, and deepest in the lower half of the gut.

Regarding the frequency of blood in the stools in cases of ulceration, it was evident from the table that it had been greatly overestimated, being absent in about two-thirds of the cases, which showed that it was of no practical value in diagnosis. The usual diameter of the small round ulcer was one-twelfth of an inch. He had seen no case in which it had completely perforated the gut. Several might coalesce to an inch in diameter. Most cases proved fatal in the acute stage.

The symptoms of the severe catarrhal and croupous forms were alike. Shreds of membrane in the stools, which would settle the diagnosis of the croupous form, were very infrequently seen in children. In the milder forms of the catarrhal variety there was a lower temperature, and more frequently implication of the stomach, and the febrile symptoms gradually subsided after one or two weeks. In cases of follicular ulceration there was pretty much the same early history, except as to the gastric symptoms. The patients might die at the end of the first or early in the second week, but more commonly they dragged along on a slow, irregular course, from one to six weeks, wasting steadily, with but little fever, until death occurred. A careful study of the forty-five cases classed as active entero-colitis convinced him that we were not able at present in by far the largest number to differentiate between these three varieties clinically.

It would be seen that the term dysentery had no place in his classification. The commonly-received opinion that in "diarrhoea" we had to do with lesions in the small intestine, while in "dysentery" the lesions were in the large intestine,

was completely overthrown by the post-mortem findings. The truth was that in by far the largest number of cases of diarrhoea in which lesions existed the most important ones were in the colon, while in the cases of so-called dysentery lesions were almost invariably found in the lower ileum as well as in the colon. Nor was there any reliable clinical difference. The term dysentery as signifying a special disease might better be dropped, since in the minds of many it fostered ancient errors. If he were to attempt to make the simplest classification possible of acute diarrhoeal diseases in children he would divide them into two classes,—namely, cases without lesions and those with lesions.

The author then considered other lesions present in cases dying of acute diarrhoeal diseases, and then passed to the study of chronic diarrhoea. The latter might last weeks or months, usually with exacerbations and remissions, and if the patient then died of some other disease, and an examination were made within six hours, one might find absolutely nothing which he could assert to be pathological. Such cases were not often preceded by an acute attack. Perhaps they could not be better characterized than by the term chronic dyspeptic diarrhoea. In another form, with a similar history, except that often there had been an antecedent acute attack, there was marked hyperplasia of the lymph nodules or solitary follicles; in the majority in the colon only, in some in the small intestine alone. In the latter Peyer's patches were also the seat of changes. When once established, the lymphoid swellings were slow in disappearing. The chronic inflammatory processes which he had seen in the intestine followed the acute. One should distinguish between those of slow convalescence from an acute attack and those which in reality were cases of chronic inflammation. He had never found the lesions of chronic entero-colitis except when it was preceded by an acute attack.

#### DIETETICS OF INFANTILE DIARRHOEA.

DR. A. CAILLÉ said that most all cases of infantile diarrhoea were due either to improper feeding or improper food.

As an illustration of the former he cited overfeeding at

the breast; as an illustration of the latter, spoiled food in bottles and unhealthy breast-milk.

In severe diarrhoea in city practice milk should be at once interdicted and mucilaginous and farinaceous drinks given. As soon as the patient is better we should teach the guardians of a bottle-fed child how to prepare a good bottle food.

As cows' milk is the basis of infants' food we need not rely upon any kind of patent food. We select good milk, dilute the same with one or two parts of water or barley-water, and add sugar, salt, and lime-water. The addition of cream is unnecessary if the cows' milk is sufficiently rich in fat.

Such a food, if sterilized or steamed in small bottles, is a good imitation of nature's food, and forms a good tissue-builder for the developing child. Where the digestive apparatus is defective, through long-standing disease, we give our patient a predigested milk, easily prepared with the peptogenic milk-powder of the shops. At the present state of our knowledge the formula for infant dietetics is very simple, and there should be no diversity of professional opinion on so important a subject.

We shall never be able to cure all our cases; many feeble children of unhealthy parentage and surroundings will succumb, for nature's grand law—the survival of the fittest—will frequently limit our hopes and successes.

#### THE MECHANICAL TREATMENT OF INFANTILE DIARRHOEA.

DR. HENRY KOPLIK said this form of treatment was intended to be based on the most advanced pathology of the disease. Its aim was to remove the source of irritation. It would be noticed that Dr. Holt had spoken of the mycotic element in diarrhoeal diseases, and if this existed, it must previously have passed through the stomach, and therefore the treatment should include the mechanical, or the cleansing of the stomach. Its greatest triumphs were obtained in the very beginning of the disease, aborting it. Of course the majority of cases were seen too late for their abortion in this way. While the best results were obtained from washing out the stomach, yet the mechanical treatment also included the cleans-



ing by this means of the lower end of the alimentary tract. The method had become well established abroad, but found more difficulty in obtaining general recognition in America. The speaker described the course of treatment pursued by Epstein and Kussmaul, which was both mechanical, dietetic, and to some extent medicinal. The best results, as already stated, were obtained in the acute gastro-intestinal diseases of infancy. In those forms with more marked lesions in the intestines some benefit was derived from washing out the lower bowel, although the speaker could say less for this than for washing the stomach, with which he had had greater experience. The tube employed was small, composed of rubber, and to the outer end a glass funnel was attached for pouring down the water. By lowering the tube the contents of the stomach flowed out.

DR. A. SEIBERT also spoke of the mechanical treatment, saying that he began its use about two years and a half ago. In September he reported over five hundred cases in which he had washed out the stomach of infants, and he had had over one hundred since. He had been called a short-sighted enthusiast in regard to this method, but he said he was willing to go through life with this name when he remembered the good he had done many children. The more stomachs of infants which he washed the more enthusiastic did he feel. He laid emphasis on the necessity of first cleansing the stomach if one wished to obtain any good results from using sterilized milk. One of the greatest advances in infantile feeding which had been made for many years was the sterilization of milk, but it seemed to him absolutely irrational to take this precaution against fermentation, or the introduction of disease germs, when one failed to cleanse the stomach, which in these patients contained in large numbers the germs for which the milk had been sterilized. He believed that within ten years every physician throughout the world would irrigate the stomachs of children as they now irrigated the bladder for vesical disease. One objection which had been raised against washing the stomach was that the casein could not pass through the tube. To overcome this objection one had only, on withdrawing the tube, to let a large quantity of water run into the

stomach, when it would be immediately vomited, bringing up all lumps with it. In fact, that was the easiest way to induce vomiting where it was desirable. The second objection was that we did not wash away the tissue which was the seat of the disease. But the same was true in irrigation of the bladder,—we did not remove the diseased mucous membrane. We did not touch the microbes within the tissue in washing wounds, but removed only those on top, and clinically we know this did much good. In none of his cases had any harm whatever attended or followed irrigation of the stomach or bowel.

#### THE USE OF OPIATES IN INFANTILE DIARRHŒA.

DR. J. H. FRUITNIGHT read a paper on the subject, in which he said opiates in the diarrhœa of infants were formerly much more used than at present, yet they still had their place. Before administering the drug the stomach and rectum should be emptied by means of irrigation. Opiates, however, should be avoided whenever there were present or threatening cerebral symptoms. For infants of one month the camphorated tincture was a desirable form, in one- to three-drop doses. Dover's powder or a preparation by Squibb were also desirable forms. The drug's influence was to reduce the number of stools and quiet the irritable condition of the stomach and bowels. It should not be administered when stupor came on, in which so many of these cases terminated. Of course it was not his intention to assert that opium was the only agent which would control the affection. It was only an adjunct, particularly in modern treatment where washing the stomach and the use of sterilized milk had come forward.

DR. SIMON BARUCH, continuing the discussion, said,—

We live in the etiological era of therapeutics. The modern physician searches for the cause of diseases, and it is his highest aim to discover and remove them. In no malady has this search been more fruitful than in those in connection with which micro-organisms have been discovered. Many of the summer diarrhœas of infants, we have now ample warrant for believing, are due to a multiplication of micro-organisms in the gastro-intestinal canal, into which they are originally

introduced by artificial milk food. The latter contains, as we now well know, besides the bacterium lactis, to which curdling is due, many other bacteria, which multiply in the stomach, precipitate the casein rapidly, and send it into the duodenum unprepared by stomach digestion, which in infants is feeble at best, and there produce the local irritations which have been so well pictured by Dr. Holt to-night. The fermentation and decomposition incident to the accumulation of pathological excretions form an excellent culture-medium for the bacteria which continue to enter the gastro-intestinal canal with the milk, and thus ptomaines are evolved which develop those alarming symptoms of collapse with which we are, alas! but too familiar. Escherich has recently enlarged upon this subject in his essay before the Section on Pediatrics of the Naturforscherversammlung. He stated that a few hours after milking there are over a million germs in the milk, which display a different effect upon the latter according to the temperature, but which usually split up the milk-sugar and produce fermentation. He divided the latter process as of ectogenous and endogenous origin. The former concerns exclusively cows' milk; the latter is a continuation of the former, due partly to the meagreness of hydrochloric acid in the infantile stomach, which disables it from killing all the germs contained in the milk after the alkalies and albumen of the latter have been acted upon. He regards the symptoms due to the ectogenously decomposed milk,—the acute intoxication, with violent local symptoms of irritation, occasionally collapse, cyanosis, and dyspnoea (cholera infantum). The endogenous fermentation produces isolated stomach fermentation, emetation, soon vomiting, atony, and dilatation of the stomach, the duodenal fermentation appearing as acid diarrhoea and colitis. Thanks to the investigations of Pasteur, Lister, Loeffler, Hueppe, Baginsky, and others, we are slowly but surely approaching a satisfactory solution of this question. Permit me to draw an analogy which will express my views of the present *status* of this question and the proper method of treating it exactly. Puerperal septicæmia is a disease which has been appalling in the past, and has counted its victims by the thousand. History has recorded how helpless the obstetrician of the pre-



antiseptic era stood in the presence of this scourge, how he sought in vain for its cause, and, groping in the dark, struck blindly at the terrible foe. When Semmelweiss discovered and proved that puerperal infection could be prevented by cleanliness of the attending *personnel* and the examining students, and by this simple means reduced the enormous mortality to seven per cent., the medical world was astounded, and our immediate predecessors were satisfied that the question had been finally solved with this most happy result. But, while the discovery and practice of Semmelweiss was a grand stride in advance, it only led to greater and better results, derived from the study of micro-organisms and the influence of chemical antiseptics upon them.

Then came the battle of the active antiseptic obstetricians, who were not content unless they irrigated the vagina and uterus with carbolic acid or bichloride. These gentlemen were imbued too deeply with bacteriological lore, but it was not long ere their extreme views were met and defeated by clinical evidence. We have passed through the stage of active antiseptic propaganda safely. What is the *status* of this question to-day? It has crystallized itself into the axiom that puerperal infection is chiefly due to the entrance into the utero-vaginal canal of micro-organisms, which produce death-dealing ptomaines, and that in the strict aseptic conduct of the labor lies the grand possibility of abolishing puerperal infection. After the latter has occurred and the system is groaning under the toxæmia, we irrigate and carbolize in vain; we cannot affect the systemic disease by local antisepsis, but we may limit the nidus of infection.

Now let me draw the analogy. I believe that in *the rigid exclusion of micro-organisms from the milk which nourishes them lies the safety of our infants*. We know that breast-milk is sterile in the breast; we know also that cows' milk is sterile in the udder. We know that breast-fed children die of summer diarrhœa only in proportion of three to one hundred artificially fed (Meinert, of Dresden, and Hope, of Liverpool, have given these ample statistics). We know, therefore, that artificial feeding is the predominating element in the etiology of these diseases; we know, also, that they are so rare in winter

that the title summer diarrhoea has been unanimously recognized as a correct designation. It follows as a logical deduction that there is some causative connection between the high temperature and artificial feeding. Soxhlet, I hold, is the Semmelweiss of this question. He has shown us that milk curdles three hundred and thirty times faster in a temperature of 98° F. than at 58° F. This, taken in connection with Pasteur's discovery, made forty years before, that the curdling of milk is due to a bacterium lactis, clears up the subject wonderfully. And, like Semmelweiss, in the other case, Soxhlet has given us an admirable practical method of furnishing an infants' milk less liable to curdle.

But the studies of Schroeder, V. Dresch, Hueppe, and Loeffler have brought out new facts which demonstrate that we must go further if we would reach the acme of success. Just as, in the case of puerperal infection, numerous bacteria were found in the lochia, with which the attempts to reproduce the disease in animals were unsuccessful, so have the attempts to inoculate animals with the bacteria gathered from the intestinal tract of infants suffering from these diarrhoeas failed to reproduce the disease. At least, no definite results were ever reached in either case. Whether we have a specific micro-organism of some of these summer diarrhoeas or not it is not so important to discover as the source whence they originate and propagate. I hold that in asepsis\* of the gastro-intestinal canal of infants—in keeping it free from the micro-organisms contained in all cows' milk—we must seek the solution of the problem involved in the fearful mortality of infants during the summer. As in the puerperal disease (if you will permit me to recur to the analogy) so must we here seek to bar the entrance of the enemy to our citadel.

Happily, this may be accomplished almost as surely in the one case as it was done in the other. The sterilization of milk is now acknowledged to be the agency by which the consummation may be reached. But here is the first difficulty

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\* We have bacteria whose natural habitat is the intestinal canal, just as we know bacteria exist normally in the lochia, but they are not pathogenic, as far as we know.

that meets us in the perfect solution of this problem, to which I desire to call your attention. We are now under the impression that Soxhlet's apparatus sterilizes the milk. Highly as I value this method, and grateful as I feel for its introduction (I use it constantly in practice), I must confess that it is imperfect. And I say so, not on my own authority as a chemist or as a bacteriologist, but on the authority of Pasteur, Lister, and Loeffler, all of whom, as well as other investigators, insist that boiling milk does not sterilize it; that it will indeed prevent its turning sour for a long time, but that after boiling it ten or twenty minutes Loeffler was able to cultivate from it several kinds of bacilli capable of producing spores growing in milk and capable of precipitating casein under alkaline reaction. Pasteur has discovered infusoria in boiled milk, capable of doing precisely the same thing.

These eminent scientists agree that the destruction of all bacteria and spores in milk can only be accomplished by exposing it to a temperature of 266° F. for half an hour.

It would seem absurd to gainsay the findings of such men as Pasteur, Lister, Loeffler, Hueppe, Marpmann, and others, and yet it is held that Soxhlet's apparatus, which barely brings the milk to the boiling-point, does sterilize it. The question may be asked, "Why does milk so prepared prevent the development of summer diarrhoea, if sterilization be the *sine quâ non*?" I answer, Because boiling does destroy most bacteria, leaving the spores; but the latter are prevented from developing because the milk is preserved in air-tight bottles from the moment of boiling to the time it reaches the infant's mouth. We have, therefore, I grant, a most excellent and practical method of preventing the summer diarrhoea. To return to my analogy: so was Semmelweiss's method, of making the students and attendants clean and disinfect their hands with chloride of soda, an excellent and marvellously effective method of preventing puerperal infection. *But it did not go far enough.* The profession was gratified by the success of the plan, and satisfied with it for a time; but more was demanded and more was brought out by Tarnier, Breisky, Stadtfeld, and others. Strict asepsis of the vagina and external parts before,



during, and after labor was added, and the acme of perfection was attained by a simple means.

I ask you to draw with me a lesson from this analogy.

Baginsky says in his recent paper on cholera infantum, which has just reached me to-day (*Berl. Klin. Wochenschrift*), "We know now how to bring the milk to the children in a sterile condition; but although the number of cases of cholera infantum has thereby been diminished, it has not correspondingly decreased." He seeks the cause of this failure of sterilized milk to limit the cholera infantum cases "in the anatomical and physiological condition of the organization of infants, which favors the development of cholera forms." Another author (Dr. Jeffries, of Boston) sought before the American Pediatric Society to discover this failure of sterilized milk in a case referred to by him, in the probability that the milk was subjected to the process after ptomaines had already formed.

This is a more plausible explanation; but both are theoretical and unproven. I find the explanation in the fact—the chemically and bacteriologically proven fact—that the milk is not thoroughly sterilized by the Soxhlet process.

Whenever we will be able to obtain milk that is completely sterilized,—i.e., milk that has been exposed to a temperature of 266° F. for half an hour; whenever we will be able to subject the milk to this process immediately after it flows from the udder, and bring it to our babies pure and undefiled; whenever the importance of the practice will become as well recognized as the practice of obstetrical asepsis is now becoming, then, and only then, will we reach the same degree of success in the prevention of most fatal summer diarrhœas of infants that we now enjoy in puerperal prophylaxis.

This must be our aim: If we believe that sterilization of the milk is a *sine quâ non*, then let it be sterilized completely.

I had intended to limit my remarks to this important point, which seems to have been overlooked, both here and abroad, although I called attention to it in this hall last May a year ago. But I will say a few words on mechanical treatment. I agree with Dr. Seibert that the stomach of a sick baby

should be cleansed before we begin to feed it with sterilized milk, if we would obtain the best success. For my own part, while I could dispense with dietetic aid, I can and do dispense with the aid of drugs, if I can thoroughly irrigate the gastro-intestinal canal of infants suffering from certain forms of summer diarrhœa. The idea of rendering the canal aseptic by medicinal antiseptics is absurd; because the concentrated solution necessary for this purpose would set up violent disturbance.

The technique of irrigating the intestinal canal would seem unimportant, but I have reported a case in which an intelligent physician, who claimed to understand the method, converted the upper portion of a rubber catheter into a perforated drainage-tube, and by the painful introduction of this clumsy apparatus not only failed to irrigate the upper part of the large bowel, but produced great pain.

DR. H. D. CHAPIN would say a word about the mechanical treatment, with which he had had some experience, especially the past summer, with regard to the statement that it was of no avail to give sterilized milk unless the stomach was washed out previously; he could not agree with it. If it were true, it would be necessary to wash out the stomach every time one gave milk, which would keep some one pretty busy. He believed that washing the stomach was very valuable but in a small number of cases. He doubted whether a large proportion of the cases in which the stomach had been washed out would not have done quite as well without it, but with the dietetic methods which had accompanied it. During the summer he had had a baby ward in an institution under his care, and in some of the cases he washed out the stomach, while in others he did not, but in all he gave sterilized milk, and they all seemed to do about equally well. He would except the cases, however, in which there seemed to be an excess of mucus in the stomach, for in these a single washing seemed to have a wonderful effect. But he had noticed that if one washing did no good, a second one would not. Some he washed out right along, but it seemed to do no good; they would die just the same as without it. He believed that in stomach-washing we had an exceedingly valuable therapeutic agent, but of

much narrower sphere than some had taught. We could not make either the stomach or the intestinal canal absolutely antiseptic.

Regarding the sterilizing of milk by Soxhlet's apparatus. He had been able to keep the milk but two or three days when sterilized in the manner described; but by boiling it an hour and a half it would keep six weeks.

DR. CRANDALL had had considerable experience with irrigation of the intestine. The tube was readily passed if the water was allowed to make the passage as it was being introduced. In one series of thirteen cases of this character of dysentery six recovered within ten days, two others in fourteen days. He had also tried it with bismuth, but thought simple water as effective. In another series of thirteen severe cases no injections were given, and three patients died. In some he used injections of salt, in others borax was employed, but water was the agent of chief value, especially in cases in which there were mucus and bloody passages and bearing-down pain.

DR. J. E. WINTERS had been surprised at the way in which the term cholera infantum had been used in the course of the discussion, for many, he said, employed it as if it were a common affection. He had seen but one case in the city which corresponded to the description of the disease given in the text-book written by the chairman. He thought some took shelter under this term when speaking of their fatal cases, when in fact cholera infantum was not present; cases which were the outcome of neglect of mild cases, probably, and were seen principally in tenement houses.

In this connection the question of the mechanical treatment came up, and he asked whether it had not been practically carried out from the time intestinal diseases were known in children. Every practitioner had been in the habit of clearing the alimentary canal in these cases, if not by irrigation, by some other means. His preceptor had not only practised giving a purge and something to vomit his patients, but in some cases washed out the bowel. Then withholding food twenty-four hours, the patients recovered. Now, with sterilized milk, cases taken in the beginning should recover. If



irrigation of the stomach were carried out to the extent that some advocated, it would result in sending many of our patients to the homœopathists. The mechanical treatment was a valuable one, but it looked as though we were going to bring it into disrepute by overdoing it.

DR. CAILLÉ added some criticisms upon the classification made by Dr. Holt, and said he did not wish to detract from the value of his efforts, but clinically it would be found impossible at present to classify the cases according to the anatomical method, for often we could not tell the presence or absence or nature of the lesions except at the autopsy; and under mycotic diseases, others not included in that class on the chart were probably really mycotic.

DR. FRUITNIGHT added that we could get along with little medication in these cases; and spoke of the value of sponging the surface of the body with alcohol and water, particularly when there was a high temperature.

DR. WOOD spoke of the importance of sterilizing milk early, or of keeping the temperature down to 50° or 60° until sterilized. He had seen it keep three to six months when sterilized with the Soxhlet apparatus. The milk most suitable for the baby came from the Jersey cow.

DR. AGRAMONTE thought milk should be sterilized before undergoing decomposition and the development of ptomaines, which meant before it reached the city. It should be done by a less expensive method than what was employed for the milk now on the market, which costs about twenty cents a quart,—a price far beyond the reach of the poor.

DR. SEIBERT added a few remarks on the necessity of regulating the quantity of food given children by their weight instead of by their age.

DR. BARUCH added that milk which would sour was not sterilized. It should be raised to a temperature of 265° F., or higher. He was trying to interest a gentleman of wealth in putting sterilized milk on the market at a price which could be reached by the poor. It was to be heated to 275° F. while under pressure.

THE CHAIRMAN asked Dr. Holt whether in his croupous cases there had been exposure to diphtheria, and added that he

had seen two cases in which the croupous inflammation of the intestine occurred in children who had been thus exposed.

DR. HOLT said in all his cases the intense local intestinal inflammation was not diphtheritic.

Officers of the section for the ensuing year were nominated as follows: Chairman, Dr. L. Emmett Holt; Secretary, Dr. W. L. Carr.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

**Grossman: Infantile Ophthalmia and its Prevention.** (*British Medical Journal*, September 25, 1889.)

It is estimated that thirty per cent. of the blindness met with results from this disease, and that there are no less than seven thousand blind from this cause in the United Kingdom. Observations by different observers show that the gonococcus is present in a majority of cases, but in some it is absent. This leads to the conclusion that the disease may be due not only to gonorrhœal secretions, but also to other vaginal discharges.

The disease is preventable and curable, if seen in time. In treatment, nitrate of silver, carbolic acid, corrosive sublimate, and iodoform have all given good results. Nitrate of silver is preferred, but the two-per-cent. solution used by Credé is stronger than is required. It is effective down to one-half per cent. Tables are presented showing that where the disease had occurred in from nine to thirteen per cent. of the cases, it had disappeared under prophylactic treatment.

In the discussion by several gentlemen the great importance of the subject was dwelt upon. It was universally agreed that the antiseptic employed was of less importance than the thorough cleansing of the eye and the immediate removal of pus as it formed. Simple prophylactic means are very effective. Careful washing of the eyes with lint and tepid water, immediately upon the birth of the head, had prevented the appearance of ophthalmia in two thousand labors.

**Hill: Some Causes of Stupidity and Backwardness in Children.** (*British Medical Journal*, September 28, 1889.)

It is not uncommon to find children who suffer from deafness, the result of enlargements of the lymphoid tissues of the naso-pharynx, described as backward and even stupid. This

is usually explained by the defect in hearing. Operations for the relief of deafness, associated with adenoid growths, enlarged tonsils, and hypertrophic catarrh of the nose, frequently result in an immediate improvement in mental acuteness incommensurate with the improvement in the sense of hearing. Without doubt such operations relieve congestions of the intracranial lymphatic and venous systems.

Writers give struma and syphilis a prominent place in the etiology of idiocy and imbecility. These diatheses are marked by adenoid growths, hypertrophies of lymphoid tissue, and enlarged glands. The question arises whether, in certain instances, these morbid conditions may not be among the causes of the lack of cerebral development.

The stupid-looking, lazy child, who frequently suffers from headache at school, breathes through the mouth, snores and is restless at night, and wakes with a dry mouth, is well worthy of solicitous attention.

**The Education of Feeble-Brained and Exceptional Children.** (*British Medical Journal*, August 3, 1889.)

The Royal Commission to investigate the brain condition of school-children says, "Besides imbeciles and idiots, there is an intermediate class of backward and feeble-minded children who require different treatment from that of ordinary children. They should be separated from ordinary scholars in public elementary schools in order that they may receive special instruction."

It will be, therefore, necessary to find out what modes of special instruction are best suited to different groups of feeble children. This will be best effected by scheduling these children, and appointing a competent authority to watch the effects of the methods pursued.

**Insurance of Children.** (*British Medical Journal*, August 10, 1889.)

This subject is still provoking discussion in England. Legislation is proposed limiting the maximum amount of insurance to four pounds for children of five years or under.

**Spicer: Throat and Nose Affections of Children in Relation to Certain Brain Functions.** (*British Medical Journal*, September 14, 1889.)

Nervous derangements, associated with throat and nose disorders, may be grouped into three classes:

(a) Those indicative of irritation of nerve-centres. (Disturbed sleep, night-terrors, stammering, etc.)



(b) Those indicative of exhaustion or debility of nerve-centres. (Headache, dizziness, drowsiness, etc.)

(c) Those indicative of defective intellectual evolution and activity. (Slowness of apprehension, weak memory, etc.)

The symptoms of irritation usually appear first and are followed by the others at varying intervals.

Conclusions are summed up as follows:

1. Certain throat and nose affections are among the special causes of derangements of sleep, temper, intellectual power, and other functions of the nervous system.

2. Long-standing derangements of these functions in the child cause defects in nutrition which leave their work on the nervous and mental faculties of the adult.

3. When no other cause of such derangements is evident, the nose and throat should be inspected.

4. The affections capable of causing the above derangements are chronic catarrh with erectile and hypertrophied mucous membrane, post-nasal adenoid growths and enlarged tonsils.

5. Many of these nervous derangements disappear and others are ameliorated by the cure of the local disorder.

6. The cases most likely to receive benefit present some of the following symptoms: Perpetual open mouth and dropped jaw; habitual mouth-breathing; snoring at night; dry mouth on waking in the morning; blocking and inability to blow the nose; recurrent colds and sore throat.

**Richards:** Combination of Bromide of Potassium with Belladonna for Enuresis. (*British Medical Journal*, June 22, 1889.)

This combination proved effectual in two cases of long duration after other means had failed. Ten grains of bromide of potassium with ten to twenty minims of tincture of belladonna were administered at bedtime.

**Brown:** Hemorrhage in a New-Born Child. (*British Medical Journal*, September 14, 1889.)

Thirty-two hours after a normal labor the infant passed blood in sufficient quantities to wet through the napkins, and an hour later vomited blood. Twelve hours later it was still passing it. Hamamelis was prescribed, the hemorrhage and vomiting ceased, and the child is now living and healthy.

**Black, Campbell:** The Treatment of Enuresis by Bromide of Potassium and Belladonna. (*British Medical Journal*, June 29, 1889.)

This author has for several years used a combination of

belladonna and bromide at the Glasgow Infirmary, with the happiest results. The monobromide of camphor is sometimes substituted for the bromide of potassium. Either of these combinations have singular efficacy in all cases of excessive reflex excitability, such as obtains in enuresis, spermatorrhœa, or epilepsy.

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## II.—MEDICINE.

Tomkins, Henry: An Inquiry into the Etiology of Summer Diarrhœa. (*British Medical Journal*, July 27, 1889.)

Out of 24,157 cases of "summer diarrhœa," occurring in Leicester during four years, the writer finds that 16,506 were in patients over ten years of age, and only 1219 were under one year. He also finds the astonishing mortality of 725 under one year out of a total mortality of 837. Since 1850 the disease has been steadily increasing. It is so largely confined to the low-lying districts along the river that they are designated as the "diarrhœa area."

Examination of the air showed that it contained, when diarrhœa was prevalent, double or treble the normal number of microbes, or their spores, while in the diarrhœa area they were four times as numerous as in the regions where the disease did not prevail. Thus 6000 to 7000 were found in the former compared with 600 to 1400 in the latter. In their cultivation, the liquefaction of the gelatin was more rapid and complete and a much more offensive odor was produced by the organisms obtained from the diarrhœa area.

Examinations of the soil produced similar results. The microbes were from three to six times more numerous in the low regions, and the liquefaction of the gelatin was more rapid and complete and accompanied by a very offensive odor.

Attempts were made to obtain cultures from the bodies of patients dying with the disease, but from various causes were unsatisfactory.

In all these cultivations where the gelatin was rapidly liquefied with a disagreeable odor, a very small dose sufficed to bring on, in the adult, a sharp attack of diarrhœa, lasting some hours.

In a series of experiments made with sterilized milk and gelatin, and with the whey of milk, bacteria developed as rapidly as in the full gelatin.

The increased frequency of the disease since 1850 is attrib-

uted to increased pollution of the soil by old privies, cesspits, and defective sewers.

Careful observations, made twice a day for three years, showed that in not one instance did diarrhœa become prevalent until the earth, for the depth of one foot, had reached a continuous temperature of 60° F. In 1888 that point was not reached until August. In the preceding year it occurred early in July, when an epidemic at once burst forth.

**Moore: The Analogy of Summer Diarrhœa and Cholera.** (*British Medical Journal*, September 19, 1889.)

The author asserts that cholera is not always marked by definite symptoms; that it is a protean disease, and often begins as diarrhœa. The most recent surmise of the cause of cholera is Koch's comma microbe. The cause of diarrhœa is probably a micro-organism not yet detected, residing in the upper layers of the earth, and not developing until a continuous temperature of 56° F. has been reached. The diagnosis of a typical case of cholera from a typical case of diarrhœa is easy, but in times of epidemic the diagnosis is sometimes impossible.

The best treatment for summer diarrhœa, whether hygienic or medicinal, is that found most suitable in cholera.

**Clark, Annie E.: A Case of Incontinence of Urine due to Persistence of Gaertner's Canal.** (*Birmingham Medical Review*, November, 1889.)

Incontinence was first noticed at the age of six years, after an attack of scarlatina. During the next eight years it was almost constant during the day, and frequently occurred at night. Examination under ether showed urine escaping from a small orifice just below the meatus. Milk and water injected through this orifice escaped into the bladder and from a small opening in the roof of the vagina. The two openings were cauterized, but the incontinence soon returned. The lower end of the canal was then dissected up for half an inch and closed with sutures. The incontinence soon returned, however, and a year later the condition of the parts was unchanged. An incision was then made through the roof of the vagina into the bladder. The abnormal canal was dissected out and stitched into the wall of the bladder and the vaginal incision was closed with silver sutures. The case was complete.

**Gibbons: Coeliac Affection in Children.** (*Edinburgh Medical Journal*, October and November, 1889.)

Under this title the author describes a disease frequently



known as "consumption of the bowels." It occurs in children between one and five years of age, and is characterized by large, loose, white, frothy, intensely-fetid passages; by pallor of the skin, wasting, and loss of strength. The appetite is usually capricious, the tongue is coated, and abdominal pain is common. The child is irritable and languid, and the loss of muscular power is marked.

The onset is gradual, the progress of the disease slow. Weeks or months usually elapse before medical aid is sought. No cause has been discovered. It frequently occurs in perfectly-healthy families, and, as a rule, no history of tuberculosis or syphilis can be traced. It does not originate, like chronic diarrhoea, from improper feeding, and is not especially a disease of the poor or those living in unhygienic surroundings. Pathological anatomy teaches nothing, but the author suggests that the condition may depend upon a functional disturbance of the nervous supply of the digestive organs, particularly the liver. This may cause serious alteration of the digestive process and ready decomposition of the food.

The prognosis is unfavorable. The majority of the children suffering from the disease die.

The only treatment of much avail is diet. Starchy foods should be avoided. Malted foods are useful, but peptonized foods seem to be of little value. Cod-liver oil and tincture of iron should be employed when well borne, and bismuth for looseness of the bowels.

**Peden:** A Case of Congenital Stenosis in the Pylorus. (*Glasgow Medical Journal*, June, 1889.)

The child at birth was healthy and well developed. On the third day vomiting began, which persisted until the end of the third month, when the child died. There was at no time any symptoms of catarrh or indigestion nor any dilatation of the stomach. Very small quantities of milk were retained, larger quantities were always rejected.

Upon autopsy, a stiff, sausage-shaped thickening was found at the pylorus, extending into the stomach and encroaching upon the lumen of the canal. Microscopical examination showed the growth to be due to thickening of the submucosa and marked hypertrophy of the circular muscular fibres. The longitudinal muscular coat and peritoneum were normal.

**Robertson:** Abnormal Enlargement of Foetal Abdomen, with Absent Rectum and Anus and Distended Bladder. (*Glasgow Medical Journal*, August, 1889.)

On the day following birth an attempt was made to find the

rectum by dissection, but failed. A trocar was then passed and a small quantity of meconium obtained. The child died on the following day, the distention being unrelieved.

At the post-mortem examination the bladder and ureters were found to be enormously distended with clear urine. The intestinal canal was not distended. It passed into the pelvis, and became embedded in the wall of the bladder, but there was no communication between the two.

**Brown, Haig: Two Cases of Diphtheria involving a Wound.** (*British Medical Journal*, June 8, 1889.)

**CASE I.**—A small sloughing sore over the inner condyle over the right humerus was covered with a diphtheritic membrane for seven days. It was accompanied by fever, enlargement of axillary glands, marked debility, and albuminuria. Convalescence was slow, anæmia was marked, and a few weeks later there was paralysis of the ciliary muscles.

**CASE II.**—Father of the above. A contusion of the skin was followed by fever, malaise, and marked prostration, with albuminuria, and the wound was covered with a membrane. Five days later a membrane appeared on each tonsil, and all the symptoms were aggravated. Nine days from the onset the membrane disappeared from the leg, and the patient seemed to be better. On the following day he was seized with syncope, and died in a few minutes.

**Barr: Two Cases of Loss of Hearing Consequent upon Mumps.** (*Glasgow Medical Journal*, June, 1889.)

The first case was that of a boy, five and a half years old, who had been subject to nasal catarrh, and had frequently a discharge from both ears. One week after the onset of mumps the hearing was suddenly lost, and there was marked giddiness, roaring in the ears, and pain in the back of the head. At the time of the report, six months later, the power of hearing was totally abolished, and the power of speech was nearly lost.

The second case was that of a man thirty-five years of age. At twelve years, during an attack of mumps, the hearing was entirely lost and had never been regained. The tympanic membrane and Eustachian tubes were normal.

The author believes that the lesion in both cases was in the labyrinth, but the nature of the pathological process is somewhat uncertain.

**Paget, Charles E.: Notes on a localized Outbreak of Diphtheria.** (*Practitioner*, June, 1889.)

Minute details are given of elaborate observations of an

outbreak of diphtheria in a district in which no case had occurred for five and a half years. The points of chief importance seem to be that those affected were children attending a given school from February 22 to March 1; that of those who sickened six were girls and two were boys; that damp and foul air from a church-yard was thrown directly into the school-room; and that all who were taken ill were seated in a particular part of the room shown to be especially damp and defective. The floor and joists under this part of the room were found to be covered with a profuse growth of brown, green, and white mould. The author believes that the outbreak was caused either by the same causes which lead to the growth of moulds, or by the spores of the moulds themselves.

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### III.—SURGERY.

Sherman, H. M.: Eight Cases of Hip-Joint Disease. (*Pacific Medical Journal*, 1889, xxxii. 71.)

In these operations the joint was reached by the Langenbeck incision, and after the removal of the carious bone from the femur and acetabulum, the cavity was thoroughly douched with sublimate solution and packed with iodoform gauze. The outer dressing consisted of oakum in sublimate gauze and a bandage. The limb was kept in position by sand-bags, and traction was kept up with a weight and pulley. Of these eight cases, four have wholly healed; one is rapidly healing, a sinus only being left; two are still suffering from prolonged suppuration, and one died.

Butler-Smythe, A. C.: Three Cases of Spina Bifida and Hydrocephalus occurring in the Same Family. (*Lancet*, February 9, 1889.)

The mother, aged twenty-nine, though delicate-looking, is a woman of fair health. She gives no evidence of rickets or phthisis, and is in no way deformed. The father is a delicate man, with bad lungs and a chronic cough; small in build, large-headed, and thick-jointed. The family history shows phthisis on both sides. Two uncles of the mother died of consumption, and her husband lost his mother and a brother from the same disease. Four of the mother's brothers died in infancy, and all of them had enlarged heads. There is no further history of deformity or of spina bifida in either family. The following table shows the history of the five children:



No.	Interval.	Sex.	Conditions at Birth.	Lived.	Remarks.
1	17 mo.	M.	Very large head.	9 months.	Died in convulsions. Head swollen and bones separated.
2	14 mo.	F.	Spina bifida in lumbar region. Hydrocephalic.	7 weeks.	Tumor burst during delivery. Had fits and died in convulsions.
3	21 mo.	M.	Spina bifida in lumbo-sacral region. Hydrocephalic.	3 weeks.	Tumor remained whole. Died in convulsions.
4	26 mo.	M.	Large head.	2½ years when last seen.	Head then enlarged and anterior fontanel open.
5	27 mo.	F.	Spina bifida in lumbo-sacral region. Hydrocephalic.	5 weeks.	Tumor burst during delivery. Infant wasted and died in convulsions.

Ellis, T. S.: *Rickets in Relation to Flat-Foot.* (*British Medical Journal*, February 9, 1889.)

The paper is in reply to one of Professor Ogston, who believes that the deformity is seldom due to anything but rickets, and also that the normal shape of bones is produced by the action of muscles, but commends only operative treatment. Mr. Ellis also believes that muscular action largely influences the shape of the bones, and should be utilized for the correction of deformities, to the exclusion, in most cases, of operative measures. In rickets there is great disposition to deformity, due to a softness of bone, which would make it especially amenable to any reformative influence. Even where exercise is entirely debarred, such agents as dry friction and intermittent compression will largely promote and maintain development. Four cases of flat-foot are cited in which there was no suspicion of rickets. Cure was effected in each, the only treatment being tiptoe and other exercises and dry friction. Proper ordinary boots and stockings were worn, and none of the patients were confined to the bed. It is quite possible that a bone once deformed may be re-formed without operation. Whether in spine or plantar arch, the muscular action which formed cannot be wholly impotent to modify. It is by the restoration of function that flat-foot should be, and may be, cured in a manner satisfactory and permanent, safe and inexpensive.

Hudson, Leopold: *Congenital Abnormities of the Ileum.* (*British Medical Journal*, February 23, 1889.)

Malformations of this region may be divided into two groups, the first including those cases where the gut is connected with the abdominal wall at or near the umbilicus:

1. The ileum opens freely at or below the umbilicus, and the chief alvine evacuation occurs through this fistulous passage.

2. A small fistulous opening at the umbilicus admits a probe, and occasionally allows the passage of fæces and flatus.

3. A tubular prolongation of the ileum connects with the umbilicus, either directly or by a fibrous cord.

4. A fibrous cord connects a normal intestine with the umbilicus.

The second group includes cases where no such connection exists :

1. Meckel's diverticulum of variable length and shape.

2. Slight sacculated pouching in this position.

3. Slight constriction.

4. Marked stricture causing secondary changes, and producing signs of obstruction.

5. Complete occlusion by a membranous septum.

6. Complete solution of continuity of the bowel, the free upper and lower ends ending in conical *culs-de-sac*.

A common feature runs through these two groups,—defective closure of the vitelline duct. When this closure has fallen short of normal fistula, diverticulum, or band results. With excessive coalescence stricture, septum, or complete solution of continuity is found.

Wilde, Leonard : A Dermoid Cyst of the Lumbo-Sacral Cord simulating Spina Bifida. (*British Medical Journal*, February 23, 1889.)

The case was exhibited on account of its rarity and difficulty of diagnosis. It was the size of a turkey's egg, and lined with piliferous skin. Four days before removal it had been opened, and pultaceous matter and loose hairs removed from the interior.

Richardson, B. W. : The Period for Surgical Interference in Acute Intestinal Obstruction. (*British Medical Journal*, February 23, 1889.)

The conclusions of the author are summarized as follows :

1. That in all cases the use of milder measures, such as purgatives, enemata, and massage, may be safely carried out until the supervention of fæcal vomiting. 2. That as soon as this is established an exploratory incision into the abdomen should be made without delay. 3. That obscurity of diagnosis in presence of this symptom ought not to stand in the way of an operation. 4. That clinical experience has taught that there is very little chance of recovery when once stercoraceous vomiting has begun, unless an operation be performed. 5. That symptoms of collapse are not a contraindication to operative interference.

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**Original Communications.**

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ADHERENT VESICAL CALCULUS IN A CHILD.—  
CLINICAL HISTORY AND GENERAL STUDY  
OF THE QUESTION.

BY A. MARTINEZ VARGAS, M.D.,

Professor of Diseases of Children in the University of Granada, Founder and  
Chief of the Pado-Clinic Faculty.

Two great problems, one diagnostic the other surgical, clearly prove the clinical history of this case, showing the incrustation of a calculus in the mucous membrane of the bladder,—a fact denied by eminent medical writers,—demonstrated beyond a doubt after the operation by the marks covering almost one-third of the calculus; and, after its extraction, on exploring with the finger, and feeling at the point of adherence the remaining grains of sand still remaining incrustated in the mucous membrane; and therefore, on account of the conditions of the structure of this stone, a new theory can be founded upon its formation, and one which, I believe, will set at rest the doubts as to the advisability of operating by lithotomy, in opposition to the theory so warmly recommended by surgeons advocating, in all cases, the operation of lithotritry, a shoal upon which the arguments of so many surgeons foundered who prefer the latter method of operating.

Such is the study which I wish to present, in accordance with the wishes of the editor of the ARCHIVES OF PEDIA-



TRICS, from whom I receive unmerited honor in being allowed to sign my name in so world-famed a journal.

*History of the case.*—Child, T. Muñoz, aged three years and three months. At his birth he had slight asphyxia. The family changed their residence three times during the first four, five, and fifteen months after birth, the child suffering in the first two changes serious diarrhœa. In each of these three villages the waters were charged with salts, and frequent cases of stone diseases are to be found there. Teething of a trying character commenced at seven months of age. At fifteen months was vaccinated; at sixteen months weaned, when the mother was already one month gone with child. Then suffered with a very bad diarrhœa. At twenty-six months the child had a slight attack of convulsions, caused by worms (?). In April, 1888, when two years old, he must have felt the first pains in the hypogastric region and the penis, for at the time of making water it caused him to cry bitterly. Generally the urine passed naturally,—sometimes only in drops; but never under any circumstances was the micturition suspended entirely. The pains were always present during the process of making water, and they were so severe that these efforts caused the child to bleed from the ears. The water was never mixed with blood. The teeth commenced to fall. From the first pains the child was visited by three doctors and a quack (*curandero*). The quack visited him for a considerable time, during which time he gave him an enormous number of infusions of boiled herbs, which increased the quantity of the water, and he also gave him hypogastric ointments.

The 11th of last June the child was brought to my pædo-clinic; it was by no means emaciated, but had great weakness in the legs; the end of the penis was enlarged, and indications of prolapsus recti were present. I administered chloroform, and scarcely had the catheter entered into the bladder when I felt the presence of a stone on the left side, and could only find it there in all subsequent explorations, and at the moment of performing the operation.

*Operation.*—With all the usual precautions, I performed lithotomy on the 13th of June, assisted by Dr. T. Timenez

and three medical students. Upon entering the bladder, I introduced the first finger of the left hand, in order to examine the bladder and touch the stone, the left side being quite free from encystment; afterwards I put in the forceps in order to extract the stone, and encountered resistance in its extraction. Suspecting that I might have caught the mucous membrane as well as the stone, I introduced again the finger, and as the bladder was contracted around the stone, I could not ascertain the state of the hinder part, but I observed that the greater part of the stone was separated from the bladder. I caught the stone for the second time, convinced now that I had not taken hold of the mucous membrane, and drew firmly twice, and succeeded in taking out the stone. Without stopping to examine it, I probed with my finger the vesical cavity, and was very much surprised, on touching the left side of the bladder, where I had always found the stone, to find a roughness in a small portion of this spot, as if grains of sand had been stuck on. I begged of those present to be kind enough to do as I had done. They did so, and all agreed in my opinion. Immediately afterwards I examined the stone, and I observed that one of the extremities of the outer part was rugged and a little sunken, quite different from the remainder of the stone, with unequal projections, showing certainly the point at which it had been detached from its adherence.

By these marks, and by the grains of sand that were adhering to the bladder, I judged that the resistance which I encountered in extracting the stone was in consequence of this adhesion. With the tip of the finger I separated the loose grains. I did not wish to drag them all out, lest hemorrhage might be produced, and open another wound to the infection. I washed the bladder with boric acid solution, at four per cent., and I left the Guyon sound in, in order to secure the discharge and avoid the hemorrhage. In the afternoon the water came out slightly colored. I gave the child a mixture of bromide of camphor and benzoate of sodium.

*First day* (14th of June).—Temperature 38° centigrade. Bilious vomiting in the morning.

*Afternoon.*—The abdomen swollen, painful, and tympanitic; applied belladonna and mercury ointments, also linseed poult-

tice; removed drainage-tube. Injection of boric solution every three hours.

*Second day.*—The urine flows through the urethra.

*Third day (16th).*—The symptoms of peritonitis subside.

*June 25.*—Cured. The wound completely cicatrized. The child does not complain in the least. I prescribed the mixture of bromide of camphor and benzoate of sodium and ointments of turpentine from time to time in the region of the kidneys.

*September 15.*—According to the father's letter, the patient is quite well, and, "catching the penis, laughs gladly at seeing the water rush out freely without pain."

*Description of the stone.*—(Vide the engravings made in the natural size, by T. Espina.) *Shape:* Nearly oval, although at both ends rather pointed. *Surface:* Is not uniform. I can say that it consists of two principal parts, the central portion and the two pointed extremities; the former is uniformly not smooth, slightly rough, and resembles very much *chagrin*; it is chocolate color; the extremities, as can be seen by the engraving No. 1, presents the aspect of inlaid pieces of distinct

FIG. 1.



formation and color, the upper end, above all, by reason of its completely conical form, gives to the stone great similitude to an acorn; the lower end is a very irregular formation; in both



the outer part is rugged, something like sand, with little crystal pebbles the color of loaf sugar.

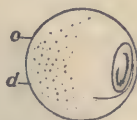
From the upper point to the central part can be seen (in the engraving No. 2, *a*, *b*) an elliptic surface with unequal bottom,

FIG. 2.



2°

FIG. 3.

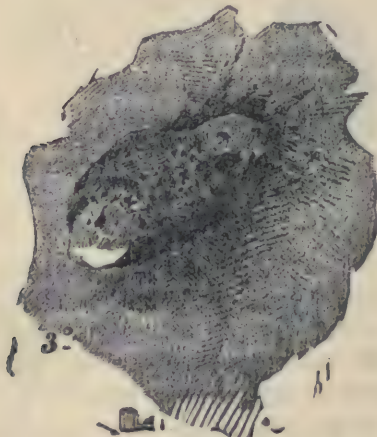


full of sharp points, which denote that here it had suffered a violent pull. This excavation measures more than the half of the length of the entire stone,—seventeen millimetres in its longitudinal diameter and six in its transversal. *Size*: As the scale was put at the sides of the stone (see engraving No. 1) it indicates the vertical diameter to be three centimetres, and the transversal seventeen millimetres. *Weight*: Three months after its extraction,—that is to say, in dry state,—the stone weighed 4.95 grammes. *Nucleus*: I cut through the stone with some difficulty because it cracked into pieces at the beginning. I found a nucleus outside of the centre; this one is oval, as can be seen in the engraving No. 4, and is composed of concentric strata, which are very few and very slight. The remainder of the nucleus the same as the surface; the rest of the stone is of a uniform appearance,—ash color. The nucleus measures seven millimetres in length by four and a half in breadth, so that it occupies the third part of the entire size of the entire section of the stone. It is immediately below the surface in the point opposite to the excavation, which I encountered adherent to the bladder, *c* and *d*. *Composition*: I did not make the analysis according to the plan of Ebstein,\*

\* "Die natur und Behandlung d. Harnsteines," Wiesbaden: Bergmann, 1884.

nor that of Laebish, modified by Keyes,\* but by the more simple one of Posner†. I examined the dust through the microscope with Dr. Mendoza, chief of the microbiological laboratory of the hospital of San Juan de Dios, and submitted it to chlorhydric and acetic acids, etc. The result proves

FIG. 4.



that the nucleus is composed of urate of sodium and, above all, of urate of ammonium, and the remainder of the stone of carbonate and phosphate of lime with something of oxalate.

*Importance of the case.*—The resistance which I met with in the extraction of the stone, the little grains of sand which we have touched, and which were so firmly embedded in the bladder, and the hollow perceived in the stone (see engraving, which is an exact reproduction of it) proves beyond all doubt the fact of the adherence of urinal stones to the mucous membrane of the bladder. The conditions under which I have been able to study this case give to it an evident and demonstrative value which render it superior to those given in surgical literature. In the future there shall be no excuse for these omissions among medical authors regarding the adherence

\* "Cálculos Urinarios," por E. L. Keyes; en "Enciclopedia Internacional de Cirugia," del Dr. Ashhurst. Version española. Madrid, 1888. Tomo viii. p. 136.

† *Centralblatt f. d. Med. Wissenschaften*, 1884, No. 18.

of the stone, as, until now, these authors have only spoken of the loose or encysted calculi (*enchatonnés*). Neither can one admit the ambiguous phrases of Dr. Keyes,\* one of the most modern and important authors on this matter, when, in relation to the adherence of the stones, he says, "Undoubtedly this hypothesis proceeds from the difficulties which present themselves at extracting a stone, and, above all, when one of its rugged sides becomes covered with coagulated blood." Reginald Harrison only mentions, in relation to this question, that he saw a case "where one of the spikes of an oxalate stone was so embedded in the wall of the bladder."† Even Alfred Pousson‡ expresses great doubt in relation to the adherence of calculi, although he does not deny the possibility of their existence.

Besides this first demonstration of the existence of adherent stones, deducted from the study of the case, we have to encounter others not less important because they are germs of practical application, without which one might say that this case is not more than a surgical eccentricity, but in many ways an interesting study.

I have said already, the difficulties in the extraction of the stone and the commencement of peritonitis, after the operation, on account of stretching or tearing of the peritoneum, prove clearly, *a posteriori*, that this was not the best manner of proceeding in order to extract such stone nor the least dangerous, as in the other two operations that I had performed previously this season, for children of the same age and the same treatment, I did not observe these difficulties nor these consequences.

In the interest of science we shall explain these points.

*Relative frequency of adherent stones.*—I have collected the principal statistics of vesical stones, as can be seen by the following table.

\* Loc. cit., p. 150.

† "Lectures on the Surgical Disorders of the Urinary Organs," London, 1887, p. 434, Fig. 69.

‡ "Encyclop. Internat. de Chirurgie. Chirurgie des Organes Génito-Urinaires de l'Homme et de la Femme," Paris, 1888. Art. "Calculs Urinaires," p. 256.



## Statistics of Calculi.

No.	COLLECTION OF	Number of Calculi.	OPERATED BY		
			Lith- otri- ty.	Perineal	Supra- pubic.
1	Hunter (Museum of)	649	.	.	.
2	Leroy d'Etiolle	1100	.	.	.
3	Guy (Museum of the Hospital)	374	.	.	.
4	Utzmann	545	.	.	.
5	Dalles	.	.	.	636
6	Quoted by Keyes, <i>loc. cit.</i>	.	.	.	.
7	Freudenburg (drainage of the bladder, etc., <i>Berliner Klinische Wochenschrift</i> , 1881, No. 1)	.	92	11	8
8	H. Thompson (two years), p. 279	103	.	13	.
9	Browne (quoted by Thompson)	.	45	.	.
10	T. Bigelow (p. 232)	85	.	.	.
11	Buchanan (p. 312)	.	4	.	.
12	Spence (p. 314)	.	.	5014	.
13	Gross (List of American and European), "System of Surgery," 6th ed., 1882, vol. ii, p. 735	.	.	6	.
14	Kuriado, Thesis, Mexico, 1883	.	.	.	5
15	Breckel (quoted by Garcin, <i>Contrib. Clin.</i> , etc., Strasburg, 1884)	.	.	22	5
16	König	38	11	140	.
17	Merevkin (quoted by König)	.	.	55	.
18	Tuffier	.	.	100	19
19	Zinzin (quoted by Ebermann)	.	.	10	18
20	Bergmann	.	.	2	.
21	Volkmann	53	25	10	307
22	Gussembauer	.	.	25	11
23	Villalobos, <i>Gaceta Médica de México</i> , 1887, p. 522	.	.	87	1
24	Guyon, <i>Revue de Chirurgie</i> , 1887	43	.	.	92
25	H. Thompson, <i>Brit. Med. Journ.</i> , 1887	203	.	.	14
26	Freyer, <i>Lancet</i> , 1887	.	.	.	94
27	Flury, <i>Ein Beitrag</i>	.	.	.	59
28	Broussin	.	.	.	.
29	Garcin	.	.	.	.
30	Bereskin, <i>Central. f. Kinderh.</i> , May 2, 1887	.	114*	132*	.
31	Keegan, <i>New York Med. Jour.</i> , September 22, 1889	.	108	.	.
32	Jackson, <i>Lancet</i> , August 24, 1889, p. 357.	.	18	.	21
33	Suender (conversation)	.	.	.	.
34	Settler	.	.	.	.
35	Several Spanish surgeons	.	.	.	.
36	Medicine Faculty of Madrid (collection)	70	.	.	.
37	" Revue de Carrillo (collection)	60	.	30	.
38	" Creus (collection)	.	.	8	.
	Martinez Vargas, season of 1889-90	.	.	.	.
		3323	430 +	5637 +	1410

After having looked over the table the adherence of the stones appears strange; however, these statistics are not infallible; although I have tried to find in them indications treating of adherence, I have not found them. I think this is due to the indifference, probably, with which the surgeons have regarded this subject, considered as a freak of nature.\* Therefore it is that they have not noted it in their statistical observations and operations. I think the time has come in which it is necessary to call attention to this matter, and that in the future we shall find cases of this kind more frequent. It is indispensable to open a chapter on the subject of the urinary pathology of children.

*History of adherent calculi.*—The admittance of the adherence of stones to the bladder is of recent date, although urinal calculi are mentioned in the Indian work entitled “*Sucruta*,” written, according to the belief of many, previous to Hippocrates, who positively studied them and mentioned them as follows: “*In quorum urinis arenosa subsistunt it vexica laborat cálculo.*”† Nevertheless, the first book which treats of the adherence of calculi is that of my fellow-countryman, Francisco Diaz,‡ a physician of the sixteenth century, who observed, in two cases, after autopsy, the choking of the ureter by stones and the great size they had attained. At the beginning of this century, Leroy d’Etiolle§ says, “*Calculi*

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\* Dr. F. Rubio has told me that Dr. Benjumeda, of Cadiz, in conversation with his students, recommended very earnestly their attention to the probabilities of adherence, stating that he had been obliged to leave an operation unfinished on this account.

† Aphor., lib. 4, sent. 79.

‡ . . . “Y es porque como alguna vez cac la piedra de los riñones se suele quedar antes de entrar en el hueco de la vejiga, y alli va creciendo cada dia, y estas Uegan á tanta grandeza que yo he visto abrir á algunos y hallarla del peso de ocho y mas onzas, porque como alli el artifice no puede Uegar dice que no tienc piedra, por ESTAR TAN FIJA NO SE PUEDE MENEAR. . . . y cierto que desto que digo yo he visto dos casos. . . . Tratado nuevamente impreso de todas las enfermedades de los riñones vexiga y carnosidad es de la verga y urina compuesto por Francisco Diaz, Madrid, 1588. Yn Noticia de las obras del Dr. Francisco Diaz célebre médico español del siglo XVI. por el Dr. E. Suender, Madrid, 1888, p. 32.”

§ “Exposicion de diversas operaciones hechas hasta ahora para curar el mal de piedra sin recurrir á la operacion de la talla.” Version española, del francés (Paris, 1825), Madrid, 1828, p. 47.

embedded or encysted may be the cause of adherences to the mucous membrane. Desormeaux,\* expounding the merits of his endoscopy, claims that only by means of this instrument the presence of adherent calculi can be detected. Chelius, professor of Heidelberg, in his masterly studies,† speaks also of adherence; Madrazo‡ affirms that sometimes calculi are to be found incrustated in the internal lining of the bladder, near its neck, and in the examination of the bladder, on account of the grating sensation felt (phosphatic concretions), mistakes may easily be made, often no stone being present. Finally, Keyes mentions several cases, particularly one of his own.§

But few writers mention adherent calculi, and if they do, none have made special study of the subject.

Among these few historical facts that I have found a distinction must be made between embedded calculi and mineral incrustations in the mucous lining of the bladder.

My friend, Dr. Suender, has observed, in his prohibitive practice, three cases of chronic cystitis with all the rational indications of calculi, but on after-examination no stone was to be found; and, in the belief that it was a case of cystitis, he injected iodoform, which caused the patients to expel numerous phosphatic scales, and in one of these cases—that of a man sixty years of age—the scales passed numbered over two hundred. Dr. Suender has been kind enough to show them to me, and I found that they bear a great resemblance to the fragments of hemp-seeds. Nevertheless, these incrustations may be the origin of a stone previous to their attaining bulk, and therefore need not be studied. The same can be said of encysted calculi (*enchatonnés*).

The following is the list of all cases I have been able to collect, with the exception of the two cases spoken of by Diaz, in which the stones, on leaving the kidneys, were detained in the vesical orifice of the ureter without passing into the blad-

\* "De l'endoscope et de ses applications au diagnostic et au traitement des affections de l'urethre et de la vessie," Paris, 1865, p. 175.

† "Tratado Completo de Cirugia," traduccion de la cuarta y última edicion alemana. Anotado y adicionado, Madrid, 1870, tomo ii. p. 272.

‡ "Lecciones en la Facultad de Medicina de Barcelona." Revista de Ciencias Médicas de Barcelona, 1887, p. 500.

§ Loc. cit., p. 150.



der, and there remaining fixed, increased in volume without adhesion.

*Pathology.*—It appears strange that so young a child should have an adherent stone, and it is still stranger that this phenomenon exists, particularly as the child felt the first pains only one year previous to diagnosis of stone in the bladder.

This adherence might be accounted for if the child had encysted stone with constant irritation which might have produced the adherence as a natural sequence. I found in the bladder of this little patient no cellular cavities nor other deformities.

I do not find, with the exception of works of Chelius and Keyes, any author who explains this process. The explanations given by Chelius, the first belonging to Francisco Diaz, are very ambiguous, and they are confounded with the doctrine of encystment. Within the hypothesis, which relates to this, I find worthy of mention the following :

(a) The stone, on passing from the kidney, is detained in the vesical orifice of the ureter, and it is fixed in the membrane, where it continues to develop.

(b) The irritation produced by the stone, and the consequent inflammation, can engender a plastic exudation that forms a pseudo-membrane around the stone.\*

(c) A hypertrophic bladder brings one of its numerous pockets against the inequalities of a stone. The precipitation of the urinal salts take place or are increased in the stone points where this is not in immediate contact in such a manner that they form as heads like those of nails between the stone and the columns of the bladder.†

(d) Upon an ulcerated part of the mucous membrane are formed crystal incrustations which are intermixed with long granulations.

(e) The contact of a sharp stone can irritate the mucous membrane to such a degree as to form granulations, which introduce themselves between the inequalities of the stone.‡

\* Chelius, p. 272.

† Nelaton, "Elem. de Path. Chir.," Paris, 1884, vol. vi. p. 67.

‡ Keyes, p. 150.

*Table of Twenty-three Cases of Adherent Stones.*

No.	OBSERVER.	ANTECEDENTS OF THE CASE.	CONDITIONS OF THE STONE.
1	Tosé Rives. Collection of stones existing in the School of Medicine of Madrid, No. 360, Catalog. 62, No. 34.	Stone extracted from the bladder of a boy, sixteen years of age, in May 21, 1821.	The stone was adherent and the point of adherence is perfectly seen.
2	Dupuytren (Museum) show case 62, No. 34.	Specimen presented by Leroy d'Etiolle.	Case of adherence.
3	<i>Medical Times and Gazette</i> , vol. ix. p. 528, 1854.	Post-mortem examination in Necker Hospital, Civiale found a calculus of phosphates three-quarters of an inch that had produced an ulceration in the base of the bladder.	Adherent to the muscular cutting after ulceration of the mucous membrane.
4	Nunn. <i>Med. Times and Gaz.</i> , vol. ix. p. 528, 1854.	After death. Behind the prostate a calculus was found, size of a nutmeg, composed of uric acid and phosphates.	Case of adherence.
5	Van der Byl. <i>Transact. Pathol. Soc. of London</i> , vol. i. p. 296, 1857.	A woman, aged fifty years, who died of uterine and ovarian cancer in Middlesex Hospital without symptoms of calculus. Post-mortem examination showed presence of a plate of phosphate and oxalate of lime an inch from the urethra in the base of the bladder.	Smooth, plate, half an inch diameter, held in place by granulations of the internal lining of the bladder.
6	Tarjaway. (Quoted by Desormeaux), with a chromo-lithograph, Plate 3, No. 9).	A man, Hospital of Saint Antoine, with the catheter, suspected presence, Desormeaux found with the endoscope as well a point of injury caused by attempts to perform lithotomy.	Adhered by its left extremity, the mucous membrane surrounding in form of a ring.
7	Houel. (Quoted by Desormeaux), p. 176.	A man, aged fifty-eight years, suffered from hamaturia, at times without sudden interruption of the micturition nor severe pains at the base of the gland. Desormeaux discovered presence of a calculus with the endoscope.	After death, found calculus adherent to the bladder.
8	G. Morton. <i>Penna. Hosp. Reports</i> , 49, 1869. Keyes, p. 150.	Case of lithotomy (?). Discovered presence of a phosphatic calculus weighing one hundred and sixty-five grammes.	Adherent to the base of the bladder by a pedicle.
9	Thompson. <i>Transact. of the Patholog. Soc. of London</i> , vol. vi. p. 230. <i>Traité Prat. des Mal. des Voies Urin.</i> , Paris, 1874, p. 627.	Male, aged sixty years. Amphitheatre of Middlesex Hospital. Three stones found in the bladder; two adherent.	In the calcareous mass fibres of infamucous tissue was embedded.
10	Henry. (Quoted by Thompson).	On operation of lithotomy found a stone, unusual size, adherent to the vertex of the bladder.	On careful examination of the stone at one of its extremities a membrane of new formation was to be seen.

11	Keyes, <i>loc. cit.</i> , p. 150.	Male patient. Performed lithotomy, and extracted a phosphatic calculus, encountering great resistance, being obliged to remove a slab in the posterior part of the bladder by scraping it.	Slab, mixed granulations.
12	Candela. <i>Siglo Médico</i> , 1886, p. 640.	Female, aged sixty years. Exploration with the catheter showed presence of stone always at the same point and immovable. An attack of acute pain caused spontaneous ejection of the stone covered with blood and pus.	Calculus with a spike. At one of its extremities, one of which very rough, suspicious point of adherence.
13	Mouchet. <i>Rev. de Chirurgie</i> , February 10, 1887, p. 148.	(a) Male, aged twenty-one years. Numerous prostatic and vesical calculi.	Stone firmly attached. Death on the third day, caused by vesical ulcerations and peritonitis.
14	The same.	(b) Suprapubic lithotomy. Vesical calculus.	Adherent.
15	Buckston Browne. <i>Clinical Soc. of London</i> , November 10, 1888. <i>Lancet</i> , November 17, p. 975.	Gentleman, aged sixty-eight years. Lithotripsy performed five times in two years, from August, 1886, to April, 1888. The sound showed presence of stone resting upon the neck of the bladder. The vesical cavity appeared free from calculus. Suprapubic lithotomy. Phosphatic calculus. Weighed a quarter of an ounce.	The stone was evidently implanted in the base of the bladder behind the prostate.
16	Reginald Harrison, <i>loc. cit.</i> , p. 422, Fig. 69.	A stone of oxalate of lime and with many prolongations.	One of the points incrustrated in the wall of the bladder.
17	Mariani. <i>Siglo Médico</i> , June 2, 1889, p. 338.	Male, aged twenty-eight years. 1886. Lithotripsy attempted. Lithotomy.	Calculus very strongly adherent at the bottom of the bladder.
18	Creus. Letter from the author.	(a) A child. Perineal lithotomy. Difficult extraction of stone.	Large and very adherent calculus.
19	The same.	(b) A child. Perineal lithotomy. A stone difficult to extract.	Large and very adherent calculus.
20	Federico Rubio. (Conversation.)	(a) A child. Calculus hour-glass shape. Perineal lithotomy.	Adherent and encysted.
21	The same.	(b) Male. A stone.	Adherent.
22	The same.	(c) Old man. Pebble-shape stone, seven centimetres long, three broad, and one thick at the centre.	Firmly adhered, causing necessarily to scrape the bladder.
23	Losada. (Conversation.)	Child, aged nine years. Perineal lithotomy. Phosphatic calculus embedded immediately underneath the entrance of the urethra in a manner that at times it was able to obstruct the canal of the urethra and produce retention.	Stone incrustrated in the mucous membrane, and besides this a covering was forming as a ring around the stone.



In the stone of my patient I did not find marks of granulations even at the time of extraction. The surface of the adherence had not the least vestige of granulated tissue; consequently it appeared that the union between the stone and the mucous membrane had taken place by means of the incrustation of the superficial grains between the cells of the vesical tissue.

The examination of the section of the stone has interest on this point of the pathology. Remember that the only nucleus of the stone is in the opposite side of the adherent part, which shows that the adherence of the stone was not simultaneous with its origin. As between the nucleus and the adhering part of the stone there is a distance equal to two-thirds of the whole bulk of the stone, one can easily understand that the union took place very much later than the commencement of the formation of the stone.

I understand that the colloid material can have a share in the production of the adherence above all, since the influence of these materials has been demonstrated by the studies of Rainey,\* of Hasting,† and of W. M. Ord.‡

We know by these experiments that the stones and their nuclei are formed by the action of colloid materials upon the salts of the urine, to which Carter has applied the term "sub-morphous." The colloid medium constitutes the stroma of the stone, but it is not visible to the naked eye. If a stone constantly rubs on any portion of the bladder, and if by the anatomical conditions of the bladder the stone is sustained near this spot, the stone may remain stuck on by means of colloid materials developed by irritation. In case that these materials become incrustated with salts, the adherence is solid and permanent. These were the attending circumstances of my patient's case.

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\* "Precise Directions for the Making of Artificial Calculi, with some Observations on Molecular Coalescence," by G. Rainey, *Trans. Microsc. Soc. of London*, vol. vi., 1858 and 1872.

† "On Molecular Coalescence and on the Influence exercised by Colloids upon the Forms of Inorganic Matter," *Quarterly Journ. Microsc. Soc.*, vol. xii., New Series, 1872.

‡ "The Microscopic Structure and Form of Urinary Calculi."

The child could not walk nor use his legs in any way. If to this want of movement we unite the form of the bladder in infancy, we can understand clearly that the stone was always in motion on the same spot, developing local inflammation, forming the fibrinous mucus. This state produced precipitation of phosphates, urates, and other salts, which incruusted the inflamed spot, which established the immediate union between the stone and mucous membrane; the same happens here as passes in the organization of pseudo-membranes in the pleurisy.\*

In no other manner can be explained this solid union of the stone without the granulations of which Keyes and Chelius speak. My idea is that, if we could have performed the operations of Carter and Ord, we should have discovered between the mucous membrane and the stone that organized material which caused the precipitation of the salts and consequently the union.

I think we can add to the theories of Chelius and Keyes the following, which serves to explain the cases where there is no granulation between the mucus and the stone.

The colloid materials accumulated in the vesical point, which is irritated by the stone, unite the stone and the mucous membrane at the same time that they precipitate the urinal salts and conglomerate them. If the union effected by the colloid holds its place while the salts are conglomerated, the definite petrified adherence is complete.

Children who have not yet begun to walk, and who are nearly always in the same posture without much movement, present more favorable conditions for a sustained contact between the stone and the mucous lining and facilitate the adherence.

*Practical applications.*—Two practical problems, of much interest, illustrate the case; the one diagnostic and the other therapeutic; the second is the immediate consequence of the

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\* Among the many autopsies that I have performed when I was physician to the Hospital of Nuestra Señora del Carmen (Madrid), I found that of an old man with a vast pleuritic effusion on the right side, the walls of which were quite ossified, for which reason, in order to extract a piece of pulmonary pleuræ, I required to use the rib-shears.

first, because, if we do not find out with a precise diagnosis all the conditions of the stone, including that of the adherence, we cannot determine which operation is to be preferred regarding an adhering stone.

(a) But few practitioners recommend seeking and ascertaining if the stone is adherent; the greater number are content with feeling that a stone exists, and *ipso facto* proceed to the operation to which they are partial. This system ought to be abandoned, and in its place such treatment should be made in order to discover whether the stone is free or adherent.

We can accumulate a great number of facts to demonstrate that there is an adherence. Dr. Candela refers in the history of his case to the fact that the catheter had scarcely entered into the bladder when he felt the roughness of the stone, and that he used forcible movements against the stone without being able to move it. I also, in my patient, stumbled against the stone when the instrument had no more than entered into the bladder. In spite of pushing with the catheter I always felt the stone in the same place.

I deduce from the case of this child that the micturition had never been interrupted, which demonstrates that the stone could not move to the entrance of the urethra, thereby closing it. Besides, another fact of importance is that the child had never had hæmaturia.

I think, then, that in a patient with vesical stone one should try to collect scrupulously the antecedents of the case; and if he has had or has not had the symptoms which I have just spoken of,—that is to say, if the patient has not had, during micturition, an interruption of the passage of the urine or hæmaturia, then there may be adherence. If there are suspicions of adherence, an antiseptic injection should be made in the bladder, and the stone can be taken hold of with a small lithotrite in order to give it ample movements; the impossibility of moving it will show that the stone is adherent.

Besides, an examination can be made with the modern endoscope, and the truth ascertained to a greater certainty than with the Desormeaux instrument.

(b) Since January, 1878, in which Bigelow \* presented his

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\* *The American Journal of the Medical Sciences*, Lea, Phila.



modifications of the old-fashioned lithotritry, the litholapaxy appears to be the perfection of surgical art, for, without causing the least injury, it satisfies an indication which formerly was only possible by an operation perilous, as is always the perineal or suprapubic lithotomy.

But the vesical stone is not always propitious to litholapaxy, and although surgeons wish to present statistics, they cannot substitute the operation of lithotomy by that of litholapaxy.

Many circumstances and reasons render cystotomy preferable to the breaking of the stone, but none of these equal in importance the adherent stone, which is a positive counter-indication of litholapaxy.

In proof of this we have the case presented by Buckston Browne to the Clinical Society of London.\* "The patient was a gentleman aged sixty-eight, seen for the first time last June, with the following history: Lithotritry had been performed five times in less than two years. The first operation was in August, 1886, the last in April, 1888. The earlier operations had given only temporary relief from very distressing symptoms, and the last one had not been followed by improvement. All the urine was passed by catheter hourly, night and day, and there was constantly recurring intense vesical spasm. . . . The history of the case, the feebleness of the patient, and the need for free drainage of the bladder determined the choice of operation, and on July 3, Mr. B. Browne opened the bladder above the pubes."

It is clearly demonstrated by this instance that litholapaxy can only be a palliative proceeding, never a radical one, against adhering vesical calculi.

While the admirers of litholapaxy cannot prevent nature producing adherent stones, in vain they may try to enforce it as an exclusive method, and in vain will be their efforts to put in the shade cystotomy. Now, with litholapaxy one can take hold of the stone in its loose part, and crack it and even reduce it to fragments, but the base will remain stuck on to the vesical mucus, and after some time the stone will acquire its former size or perhaps a still greater. Therefore it is necessary to recur to the cystotomy.

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\* *Lancet*, November 17, 1888, p. 966.

Is there, then, a preference to be given to one of the many methods belonging to lithotomy? The first degree of peritonitis that this child had in the hours following the operation indicate that the traction exercised upon the stone ought to produce a dragging or tearing of the peritoneum, whose injury had been the cause of the inflammation that fortunately I was able to stifle.

For this reason it is necessary to act immediately upon the calculus, and by so doing detach it from the bladder; in this manner, without damaging the peritoneum, you can extract the stone.

In this case it is necessary to have ample opening,—that is to say, that you may have at the same time room for the introduction of the forceps and the finger; in this respect the greater number of surgeons consider indisputably as superior the suprapubic to the perineal lithotomy. In treating children there is much more reason that it should be preferred. Besides, the suprapubic lithotomy conduces better to visual examination of the bladder, showing if the adhering spot requires a special treatment.

The calculus being now extracted, the next treatment is, in the cases of adhering stones, by injections of weak solutions of nitric acid, in order to prevent any grains of sand, which may remain attached to the mucous membrane, from afterwards becoming the origin of another stone. The remainder of the cure belongs to the general scale of treatment of these operations.

The considerations regarding adherent stones that I have given as accurate indication of the suprapubic lithotomy, and counter-indication of the litholapaxy, are applicable to the cases of encysted calculi, of which we have examples in the exceptional case of Murray Humphrey,\* in the cases of my friends, Dr. San Martin and Dr. Pulido,† and, above all, in that presented by Fenwick to the Clinical Society of London,‡ the extraordinary circumstances of which, and its resistance to

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\* Thompson, *loc. cit.*, p. 624.

† *El Siglo Médico*, 1889, pp. 238, 239.

‡ *Lancet*, 1888, p. 965.

the chisel and mallet, might almost serve as the groundwork of a novel or the history of the stone-worker in the bladder.

*Conclusions.*—1. The clinical history of this child shows evidently that the vesical calculi can be adherent to the mucous membrane without having anything to do with the encystment.

2. It is characteristic of this case that there is no suspension of the urine; in micturition there is no hæmaturia; that there is great resistance in the extraction of the stone; that there are grains of sand which stick to the bladder after the stone is extracted; a marked cavity in the stone, as is shown in the engraving; and, finally, the commencement of peritonitis immediately after the operation.

3. The frequency of the case appears very rare, according to the statistics of seven thousand four hundred and seventy-seven cases that I have tabulated. In my opinion this rarity is due more to the indifference with which it is regarded by surgeons than to a natural cause.

4. As this phenomenon of the adherent stone is very interesting, it is necessary to open this chapter on the urinary pathology of children.

5. Notwithstanding the remote antiquity of the studies upon urinary calculi, the adherence of stone has not been spoken of until the sixteenth century, and from the beginning of this century until the present date twenty-four cases, including my own, have been registered.

6. None of the theories given to science to explain the adherence interprets fully the stone of my patient; for want of such I give the following: The colloid materials accumulated in the vesical spot, irritated by the calculus, keep united the bladder and the stone for a considerable time, long enough to form the precipitation and conglomeration of the urinal salts, resulting thus in a solid and definite adherence. Children who have not yet begun to walk favor this state of things.

7. Remembering this case, in the future surgeons ought to determine without doubt if a stone is adherent, and not be content with a simple diagnosis which does not determine this fact, because there are always means of discovering the truth.

8. Litholapaxy has in the adherent stone the greatest



counter-indication to be proclaimed the only method in the operation of calculi.

9. In order to extract an adherent stone it is necessary to perform lithotomy. The suprapubic lithotomy is preferable, because the perineal cannot avoid the violent dragging and the injury of the bladder nor of the peritoneum.

ALCALÁ STREET, MADRID, October 12, 1889.

## CONGENITAL DISLOCATION OF THE SHOULDER-JOINT.—A REPORT OF TWO CASES.

BY CHARLES L. SCUDDER, M.D.,

Assistant in Clinical Surgery, Harvard University, Boston.

THE etiology and the pathology of the congenital deformity of the *foot*, commonly known as talipes equino-varus, has been pretty satisfactorily determined, and the rational treatment of this deformity in its varying degrees of severity is already established. The etiology and the pathology of congenital dislocations of the *hip*-joint are likewise determined, but the treatment is not yet, save in three or four instances, satisfactory. In congenital dislocations of the *shoulder*, on the other hand, very little progress has been made. I have to report two cases of this deformity which came recently under my observation, and which are of interest because of their extreme rarity.

CASE I.—A boy, nine years old, of Irish parentage, with a good family and personal history, is the second of four children. The mother suffered no injury during her pregnancy with this child, and was delivered manually, with ease, at full term, the head presenting. At present this boy is fairly well nourished, and a little under the average height and weight.

*Attitude.*—He stands as shown in the photograph. The right shoulder and right upper extremity at once attract attention. The right elbow is abducted three inches from the side, and the forearm and humerus are slightly flexed. The whole

arm is rotated inward ; the forearm is pronated. The humerus is so rotated that the internal condyle looks backward, and the olecranon process of the ulna looks outward. A distinct depression is seen in the infra- and supraspinous fossæ. The right pectoralis major appears smaller than the left. A rounded prominence is seen under the outer half of the spine of the scapula, a little behind the acromion process, and about the size of a large horse-chestnut. This prominence is hard, of slightly irregular surface, which is continuous with a smoother portion nearer the chest wall, and this latter is continuous with the shaft of the humerus. This prominence is movable with the shaft of the humerus, and is the head of that bone. The scapula is small ; the glenoid cavity cannot be felt ; the acromion process is in close apposition to the coracoid process, and is better developed than in the second case.

*Voluntary movements.*—The voluntary movements are all feebler than on the other side, and are greatly limited, by the position of the head of the humerus, in abduction, flexion, extension, and especially in abduction across the chest. Flexion and extension of the forearm are very much weaker than upon the left side. The movement of extension is not completed voluntarily, but the arm will allow complete passive extension. Pronation and supination are slightly limited by the position of the whole upper extremity. Rotation of the humerus is accompanied by greater movement of the scapula than upon the left side. Passive rotation of the humerus is greatly limited because of the contact of the head of the bone with the spine of the scapula. The vertebral spines present a slight, long, lateral, flexible curve, with the convexity to the left side. There is no rotation of the vertebral bodies. Trac-tion upon the arm at the elbow in varying positions, with counter-extension upon the scapula, does not alter the relative position of the head of the humerus upon the right side.

MEASUREMENTS.

Length of right clavicle . . . . .	3 3-4 inches.
“ “ left “ . . . . .	4 1-2 “
From acromion to external condyle of right humerus . . . . .	8 1-4 “

From acromion to external condyle of left humerus . . . . .	9 1-2 inches.
Circumference of right upper arm . . . . .	6 1-4 "
" " left " " . . . . .	7 1-4 "
Circumference of right forearm . . . . .	5 1-2 "
" " left " " . . . . .	7 1-2 "
Length of right radius . . . . .	7 1-2 "
" " left " " . . . . .	7 3-4 "
Length of right ulna . . . . .	7 1-2 "
" " left " " . . . . .	7 3-4 "

At the level of a plane, passing three-fourths of an inch above the nipple in front and through the fifth dorsal spine behind,

The right chest measures . . . . .	13 inches.
" left " " . . . . .	14 "

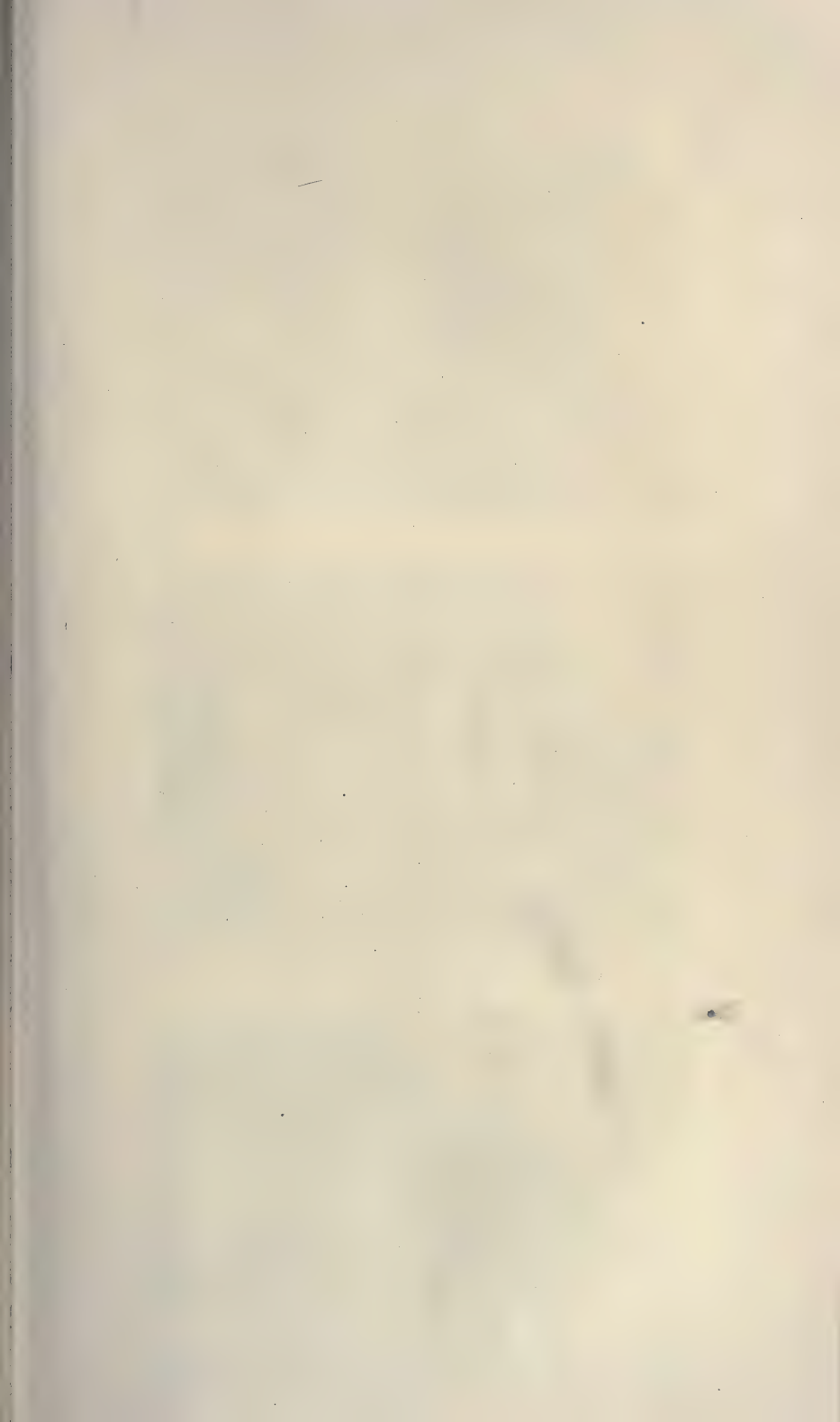
The length and circumference of the thighs are alike; the circumference of the legs is the same.

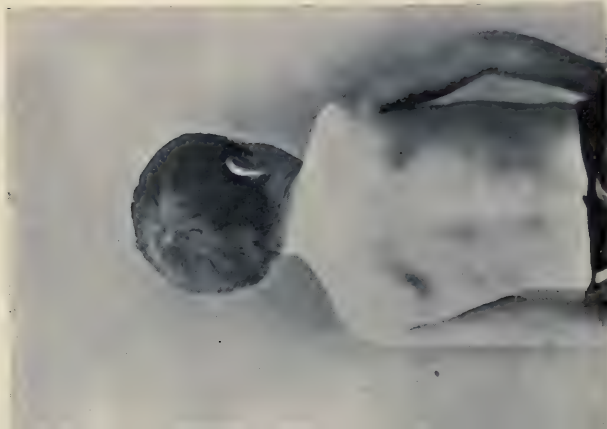
CASE II.—A girl, seven years old, of the same Irish parentage as that of Case I., with a good family and personal history, is the third of four children. The mother suffered no injury during her pregnancy with *this* child, and was delivered without the aid of instruments, at full term, the head presenting. At present this girl is a little under size and weight, and fairly well nourished.

*Attitude.*—She stands as is seen in the photographs. The right elbow is naturally held away from the side, the forearm and humerus are both slightly flexed. The forearm is pronated completely. The humerus is rotated farther inward than in the first case, so that the internal condyle looks *backward* and *outward*, and the olecranon process of the ulna looks outward and very slightly forward. The head of the humerus is felt under the outer third of the spine of the scapula, a little back of the acromion process.

The voluntary movements are limited, as in the first case. The glenoid cavity cannot be felt. The scapula is small. The acromio-clavicular joint is very prominent on the right side. The coracoid process can be seen upon the right side, in close proximity to the acromion, which is small. The vertebral spines are slightly curved to the left in the dorsal region. There is no rotation of the vertebral bodies. Traction, as in Case I., causes no change in the relative position of the humeral head.







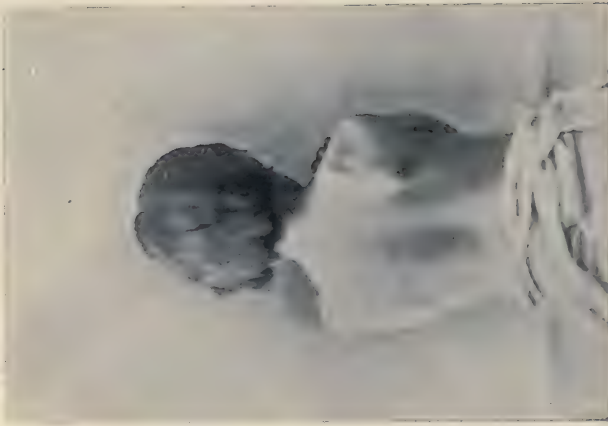
CASE I.

Notice position of the arm. Prominence of humeral head. Small scapula. Depression in infrascapular fossa. *Slight* lateral curve to the left of vertebral spines.



CASE II.

Notice position of the arm; shape of shoulders, short clavicle. Flat chest on the right side.



CASE II.

Small scapula. Humeral head on the right side. Hands on shoulders.

## MEASUREMENTS.

Length of right clavicle . . . . .	3 3-4 inches.
" " left " . . . . .	4 1-8 "
From acromion to external condyle of right humerus . . . . .	7 1-2 "
From acromion to external condyle of left humerus . . . . .	9 "
Circumference of right upper arm . . . . .	6 "
" " left " " . . . . .	6 1-4 "
Circumference of right forearm . . . . .	5 1-2 "
" " left " " . . . . .	6 "
Length of right radius . . . . .	7 "
" " left " " . . . . .	7 1-4 "
Length of right ulna . . . . .	7 "
" " left " " . . . . .	7 1-4 "
Right half of chest measures . . . . .	11 1-2 "
Left " " " " " . . . . .	12 "

The right pectoral muscle is smaller than the left. The vertebral border of the scapula upon the right side measures four inches; upon the left side it measures five inches.

From the acromion to the inferior angle of the right scapula is . . . . . 5 1-2 inches.

From the acromion to the inferior angle of the left scapula is . . . . . 6 1-2 "

The length and circumference of the thighs are the same.

The circumference of the calves are the same.

*Electrical test.*—Through the very great kindness of Dr. William N. Bullard, of Boston, who made the electrical tests of the muscles in these two children, it is possible to make the following report. The faradic reactions in the two children did not show anything remarkable.

*Galvanism.*—In the boy (Case I.) the right biceps was increased; the deltoids were alike; the right trapezius was slightly diminished. In the girl (Case II.) there was "not much difference detected" in the two sides. There is no reaction of degeneration present in either case.

*Brief summary of cases.*—These cases present very similar signs. Two children, one seven and the other nine years of age, are born of the same parents, each by a normal labor, the middle two of four children. The attending physician discovers at birth nothing wrong with the shoulders of either child. Some time after birth the mother notices that the right arm in each case is not handled by the child as easily as is the



left one. As the child grows this disability increases; there is, however, no pain at any time, but at the end of seven and nine years, respectively, neither can feed himself with the right hand, and each is hindered from the proper use of the right arm. During this period the clavicle, scapula, and humerus, and the muscles of the scapular group, noticeably the supra- and infraspinatus, the deltoid and the pectoralis major, together with the muscles of the upper and forearms, in each case do not grow. Because of this lack of *muscular* development the various bony prominences of the shoulder come out in bold relief. The deformity is increasing, and with it is an increasing disability. The deformity of the upper extremity is noticed by all,—viz., the arm held from the side, rotated inward, and pronated. This is a clinical picture of no very doubtful kind.

According to Von Ammon, each of these cases should be considered a true congenital dislocation, or, more accurately, a congenital misplacement of the shoulder-joint.

The deformity was overlooked at birth because it was not looked for, and the differences in the two sides were not so marked as to attract attention. But it was noticed a few days or weeks later, and the child used the arm, but imperfectly.

So-called congenital dislocations may be due to traumatism, causing paralysis of certain muscles of the shoulder, either by the pressure of the forceps on the brachial plexus at the side of the neck or by direct traction upon the arm.

In *these* cases traumatism has played no part. From the electrical reaction of the muscles it is certain that there is now no paralysis; and that there has been none is rendered very probable from the facts, first, that no spastic condition is present in any of the muscles about the joint, and, second, that the electrical reaction is very nearly the same on the two sides.

The positive evidence, however, against the deformity being a paralytic one is the fact of the small size of the bones of the right shoulder compared with those of the left. The difference is too marked to be explained simply by disuse and paralysis of the affected side. Then add to this the anatomical conditions present, and the evidence is conclusive that in these two cases there is present no paralytic deformity due to

traumatism, but a purely congenital affection,—a congenital misplacement of the shoulder-joint with resulting deformity.

To have determined that it is congenital is not sufficient. In the case of the hip-joint, where a large amount of work has been done to determine the etiology, it has been demonstrated by Grawitz\* that the primary cause of congenital dislocations is the failure of the Y cartilage of the acetabulum to complete the growth of one or all of the segments of the os innominatum. The appearances in the femur were those of normal growth. This inequality in the growth of the acetabulum and femur—in other words, the arrested development of one portion of the hip-joint and the normal development of all other parts of the joint—explains the production of the deformity.

In the case of the common congenital dislocation of the foot, talipes equino-varus, an arrest of development of all tissues of the part, and noticeably a portion of the astragalus, is sufficient to explain the occurrence of the deformity, and to indicate its rational treatment.

R. W. Smith, in 1839, is the first and only one who has described the appearances found in congenital dislocation of the shoulder-joint. He made autopsies upon two cases, each with double dislocations. He found the original glenoid cavity lacking or rudimentary, and the new one well developed, either immediately under the coracoid process, or on the outer side of the scapula, below the acromion. These are the only post-mortem examinations recorded, with the exception of one made by Küster in a doubtful case, where the glenoid cavity was found small and undeveloped, with a normally developed humeral head resting upon one edge of it. The weight of evidence goes to prove that congenital dislocations in *general* are due to defective formation, or the arrested development, of one or more of the bones constituting the joint. Unlike dislocations from traumatic causes, the head of the bone need never have left its corresponding joint surface. In certain exceptional cases pathological changes in some other constituent of the joint may be a factor in causing a dislocation,

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\* *Virch. Archiv.*, 1878, vol. lxxiv. p. 1.

and there may be present occasionally a mechanical factor, acting in utero.

In the two cases reported to-night there is almost the condition of the bones and joints represented in one of the plates given by Smith. There is present no ordinary dislocation, with secondary atrophy from disuse, but there is an undeveloped clavicle and upon an undeveloped scapula a glenoid cavity placed back a little, under the outer portion of the spine of the scapula, looking forward and inward, far enough backward to be considered subspinous, although almost subacromial.

We find, then, in these two cases, a congenital arrest of development.

*Explanation of details of position.*—The rotation inward of the whole arm is due to the anatomical arrangement of the parts, chiefly to the position of the glenoid cavity.

Muscular spasm is absent in the internal rotators of the humerus.

But habitual use, from the necessity of anatomical relations, with a resulting development of certain muscles, may be a factor in determining the permanency of the position of the arm.

The flexion and abduction of the humerus are evidently due to a locking of the head of the humerus under the spinous process of the scapula in its glenoid cavity. There is no unusual twist in the shaft of the bone.

The projection of the inferior angle of the scapula is increased when an attempt is made to force the elbow to the side and at the same time to extend the humerus.

The most frequent congenital dislocation is that of the hip; next, that of the shoulder, and then that of the head of the radius.

The records of Von Langenbeck's Polyclinic show ninety congenital dislocations of the hip, five of the shoulder, two of the head of the radius, and one of the knee. In all medical literature I can find but *twelve* well-defined cases of congenital dislocation of the shoulder-joint, and I find no other instance of two cases occurring in the same family. The fact of a brother and sister presenting this deformity certainly suggests



an hereditary influence present, and adds additional support to the idea of a congenital origin in these cases.

Of the twelve cases of congenital dislocation of the shoulder-joint reported, five were subacromial, five were subcoracoid, and two were subspinous. These cases were reported by Guérin, Smith, Küster, and Krönlein.

*Diagnosis.*—It is of very great importance to distinguish this deformity from that occurring during delivery, and which is due to paralysis. This has been described by Duchenne, of Boulogne, and may be caused, as has been already mentioned, by the pressure of the forceps on the brachial plexus at the side of the neck, or may be due to direct traction on the arm. When all the muscles of the shoulder are paralyzed, the displacement is always downward and forward, and incomplete. When the paralysis is partial, the displacement is affected by the non-paralyzed muscles. In new-born children, deformity of the shoulder, due to paralysis, is said to be always subacromial. The deltoid, infraspinatus, brachialis anticus, and biceps are the muscles usually affected. In some cases there is paralysis of the muscles of the forearm and hand, supplied by the musculo-spiral nerve.

Cases of traumatic dislocation at birth without any real paralysis may occur which may be confounded at the time with a true congenital dislocation unless care is taken.

*Prognosis.*—The prognosis in these cases is certain if untreated, and uncertain if treated. Usually, when untreated, the disability and the deformity increase with age, the contrast between the undeveloped shoulder and its fellow becoming more apparent with the lapse of time.

*Treatment.*—In these particular cases the parents will allow nothing to be done.

Nothing has ever been attempted in the treatment of this deformity either mechanical or operative.

There are present in these cases limitation of motion and undeveloped muscles. Greater usefulness of the limb and the absence of deformity are sought. The indications, therefore, are for greater range of joint-motion and greater muscular development in certain groups of muscles.

The accomplishment of the first without the second would

be useless. The accomplishment of the second without the first might be of advantage. To accomplish the first object three methods might be pursued :

(1) Wiring the humeral head to the glenoid cavity ; advantage could thus be taken of the scapula muscles in movements of the humerus, the mobility of the scapula in these cases being very great.

(2) Excision of the head of the humerus.

(3) Removal of the portion of the scapula spine offering obstruction to motion.

Whenever there is doubt as to the possibility of obtaining greater muscular development, every attempt should be made in this direction before operative procedures are entered upon.

The deformity is a serious one, and radical methods are called for. The muscles, as we have seen from the electrical examination, show no degeneration reaction. There is muscular tissue present, and it is a question to be determined in the future, how much usefulness may be obtained by careful and systematic electrical treatment. In two or three cases of congenital dislocation of the *hip*-joint successful attempts at *traction* have been made, the head of the femur having been retained a sufficient length of time in contact with the os innominatum to cause the formation of a new joint about the head of the bone. With a proper retentive apparatus, such cases have had a functionally useful limb.

In congenital dislocations of the shoulder-joint, on the other hand, *traction* would be of no use, for there is no bony prominence, save the ribs of the chest wall, to which the head of the humerus could be drawn, and in both the cases reported it was impossible, by means of considerable traction upon the humerus in various directions, to move the head of the bone from its place.

Something can be accomplished without operation.

The normal reflexes are disturbed in the upper extremity.

By instruction, these reflexes may be developed and the child taught to enjoy the using of what muscular power he has to the best possible advantage.

NOTE.—I am greatly indebted to Dr. F. W. Whittlesey, of Great Barrington, Mass., for assistance in obtaining photographs of these cases.

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AN EPIDEMIC OF MEASLES, WITH REMARKS  
ON RÖTHELN.\*

BY CHARLES W. TOWNSEND, M.D.,

Boston.

DURING the three months beginning the last of February and ending the first of June, 1888, I attended, in a dispensary district, covering a small area at the North End of Boston, seventy-six cases of measles, a consideration of which, with special reference to their resemblance to rötheln, may perhaps be of interest.

Of the 76 cases, 72 had never had measles before; 4 had had it once before. The latter were three boys and one girl,

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\* Read before the Obstetrical Society of Boston, May 11, 1889.



aged respectively, five, four, one and a half, and five years. The ages of the 72 cases who had measles for the first time were as follows: Four months, 1 case; six months to one year, 9 cases; one year, 8 cases; two years, 13 cases; three years, 5 cases; four and five years, 19 cases; six to ten years, 13 cases; over ten years (the oldest being twenty-one years), 4 cases. Twenty-nine were male; forty-three were female.

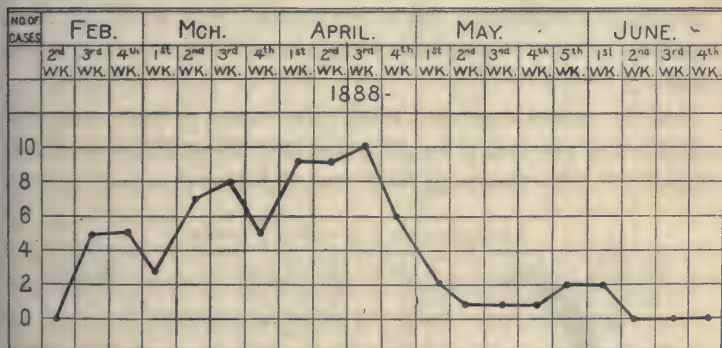
Living in the same room with these, in fact, nearly always sleeping in the same beds, and therefore thoroughly exposed to the contagion, were seventy-three other children who did not contract the disease at this time. Of these, 66 had had measles before, twenty-seven boys and thirty-nine girls; three of these having had it twice, while seven had never had it before,—five boys and two girls. The ages of the latter were as follows: Four months, 2 cases; one year, 1 case; three years, 2 cases; eleven years, 1 case; thirteen years, 1 case. Of the 66 cases who had had measles before, 1 was two years old, 1 three years, 1 four years, 23 between six and ten years, and 40 were over ten years of age. In other words, 149 children in all were exposed to contagion; of whom 79 had never had measles before, and all but 7 took the disease; while of 70 who had had measles before, 3 having had the disease twice, only 4 were again attacked. Thus, of 149 children, 7 had measles twice, and an equal number escaped the disease. One family, in which there occurred two cases of measles, the rash being out from the 22d to the 26th of April, moved out of their tenement of two rooms on the 10th of May, and a second family moved in on the same day, no very thorough cleaning and no fumigation having taken place. In the second family were 2 children, aged nine and six years, who had had measles, and 2 aged two and a half years and six months, who had never had measles, and none of them acquired the disease.

In another family a child of four years had measles, beginning on the 2d of March. A baby was born March 23, in the same room, no disinfecting precautions having been taken; but the baby did not acquire the disease. Flint \*

states that the susceptibility to this disease is very slight during the first six months of infantile life. As has been shown, there were three babies, four months old, exposed to measles: one took it and two escaped; while of ten, between the ages of six and twelve months, all but one was attacked. All of the infants under one year of age were at the breast, with one exception; but, as is the custom among the lower classes, it is probable that all obtained occasionally more or less of artificial food.

Although I was obliged to go frequently from cases of measles directly to other families who had not had measles, without taking any disinfecting precautions, in no instance, as far as I am aware, did I convey the disease.

The following chart shows the number of cases of measles occurring during each week of the epidemic:



It was possible, in some instances, to determine the duration of the stage of incubation. In 42 cases this could not be discovered; most of these having taken the disease in some unknown way, probably at school, from contact with clothing from infected houses, or while visiting at their neighbors. The mildness of some of the cases allowed the children to play about the house even during the stage of eruption. Where a second case or a group of cases occurred in a family, after one member had been attacked, the period of incubation was estimated by reckoning the duration of the interval from the first appearance of the rash, in the initial case, to the beginning

of the prodromata in the second case, and was found to be as follows in 34 cases :

#### DURATION OF INCUBATION STAGE.

Five days in . . . . .	1 case	Eleven days in . . . . .	1 case
Six " " . . . . .	4 cases	Twelve " " . . . . .	4 cases
Seven " " . . . . .	4 "	Fourteen " " . . . . .	1 case
Eight " " . . . . .	4 "	Fifteen " " . . . . .	1 "
Nine " " . . . . .	5 "	Sixteen " " . . . . .	1 "
Ten " " . . . . .	8 "		

Owing to the great prevalence of measles at this time, it is possible that some of the cases found to have an incubation stage of only five or six days may have been infected elsewhere, and that they really had a longer incubation stage. Those with apparently a long incubation stage, although exposed for that length of time, may not have become infected till several days had elapsed. Two cases in the same family were apparently infected by a visitor, whose own child was suffering from measles. Here the incubation stage lasted from ten to fourteen days.

Of the duration of the prodromal stage a more complete record was possible. In 10 cases only it could not be determined ; in the remaining 66 it was as follows :

#### DURATION OF PRODROMAL STAGE.

No prodromes in . . . . .	5 cases	Three days in . . . . .	28 cases
Half a day or less in . . . . .	3 "	Four " " . . . . .	4 "
One day in . . . . .	9 "	Five " " . . . . .	3 "
Two days in . . . . .	18 "	Six " " . . . . .	1 case

Thus, in 17 cases the prodromal stage was not longer than twenty-four hours in duration.

A full description and analysis of the symptoms is not attempted here ; but to a few points I wish to call special attention, as many of the cases presented appearances and symptoms which strongly suggested cases described as *rötheln*.

Vomiting during the prodromal stage occurred in but a few cases ; being noted in only six ; and in some of these it was probably induced by the mother's attempt to administer the gin and saffron, which is thought by them necessary to bring out the rash.



Catarrhal symptoms, namely coryza, conjunctivitis, and cough were present in all the cases, but were usually very mild. During the prodromal stage, if such were present, these were especially mild, and in a number of cases conjunctivitis did not appear until the rash showed itself. In one case the slight conjunctivitis began when the rash was fading. In many of the cases redness of the conjunctivæ was hardly noticeable, and in two cases I noted that there was no injection of the membrane. Cough was severe in five of the cases; slight in the remainder.

Diarrhœa was noted in four cases. In six cases there was slight sore throat. The cervical glands were found slightly swollen and tender in six cases; in two others they were swollen but not tender.

Fever was slight in many of the cases, as shown by the general good condition of the patients, and by the fact that it was difficult to keep them in bed; and the temperature was rarely found as high as  $103^{\circ}$ . In one case the temperature on the second day of the eruption was  $99.4^{\circ}$ ; on the third day, when the rash had come out thickly, it was  $100.4^{\circ}$ , a temperature which would suggest r  theln rather than measles, —moreover, the child had had measles before. The rash in this case, however, was the typical measles rash with confluent and crescentic-shaped lesions.

In 16 cases the rash was profuse; in 47 cases moderate; in 10 slight, and in 3 very slight. The duration of the rash was noted in 25 cases, and was found to be as follows: Two days in 3 cases; three days in 6 cases; four days in 8 cases; five days in 4 cases; six days in 3 cases; seven days in 1 case. Desquamation was often absent or very slight.

The character of the efflorescence varied greatly. In several cases the efflorescence made its appearance simultaneously on the face and trunk; in three cases it appeared first on the abdomen, and in one case first on the thighs. In all other cases the temples and face were the first regions affected, the rash spreading sometimes within a few hours, and sometimes not for over twenty-four hours, over the whole body. As a rule, twenty-four hours were occupied in this process. The rash was noted in several cases to be much more profuse on

the face than on the body. In one of the cases, where the rash appeared first on the abdomen, the skin of the whole body was affected, with the exception of the forehead and face. Not only was the typical measles rash seen with its deep-red macules and papules, confluent in places so as to form irregular and crescentic groupings, but also cases were seen where the rash was of a paler red and in the form only of macules and papules scattered diffusely over the skin. The "slight" and "very slight" cases of rash, tabulated above, represented this latter class. In one case, on the other hand, where the rash was very intense and confluent, the left hand and forearm, on the second day of the eruption, was covered with a bright erythema, on which papules the size of a split pea appeared almost white; on the following day the erythema had faded, and the papules were red.

Of the 76 cases, one, in a baby of seven and a half months, was complicated with acute lobar pneumonia of the right apex, which began on the third day of the prodromal period, the day before the appearance of the rash, and ran a favorable course; the temperature dropping to normal on the fifth day of the pneumonia. The rash came out well, lasting three days. Another case, a girl of two years, was complicated with broncho-pneumonia, and died in twenty days from the onset of the measles. This was the only fatal case.

To sum up. We have considered here a mild epidemic of disease, many of whose cases closely resembled the description given of r  theln, while others were typical cases of measles. As these two diseases are believed to be entirely distinct, and as cases resembling the one were seen to give rise to cases resembling the other, it is evident that the epidemic consisted in reality of only one disease, and that the other was merely simulated. Was this epidemic, then, one of measles or of r  theln? But before answering this question another presents itself, namely, Does r  theln exist as a distinct disease, and, if so, what is its symptomatology?

In reading the descriptions of the r  theln, by various authors, and the accounts of epidemics of this disease, one is impressed with the fact that, in some cases at least, the epidemics are evidently those of measles, occasionally of scarlet fever.

The statements and descriptions are often contradictory, and that which is considered diagnostic by one writer is not even observed by another. The particular epidemics are seized upon by the writer under whose observation they have fallen as the type of the disease, and his description is framed accordingly. Among the older writers, especially, epidemics called r  theln were described where the disease ran a violent course, and the mortality in some cases was high; but more recent exponents have almost all conceded that r  theln is a very mild disease, scarcely ever fatal.

Briefly, r  theln is described as an infectious disease, with an incubation stage variously put at from one to three weeks, whose prodromal stage is often absent, or of only twelve to twenty-four hours duration. The rash, which lasts from two to four days and is followed by little or no desquamation, begins first on the face, and, although sometimes resembling the rash of scarlet fever, generally resembles that of measles, consisting of scattered macules and papules, which seldom become confluent, as in measles, and are generally of a lighter red color. Catarrhal symptoms of the air-passages and conjunctiv   are slight, and the accompanying fever is also slight. A mild sore throat and enlargement of the glands behind the ear and in the back of the neck are stated by some authors to be characteristic symptoms, but they have not been observed by others. With the intention of silencing all doubters, Str  mpell\* says, "That r  theln does exist as an independent form of disease can be denied by those alone who have never seen it."

It will be seen that this description of r  theln, which was taken chiefly from Str  mpell and from Griffith's† account, corresponds in the main with mild cases of measles.

In fact, given a mild case of measles, where the eruption is not abundant, where the catarrhal symptoms are slight, and where the prodromal stage is at the same time short or absent, we have a picture of disease exactly like that described as r  theln. Yet in the epidemic under consideration all grades

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\* "Text-Book of Medicine," American ed., p. 48.

† *New York Med. Rec.*, July 2 and 9, 1887, pp. 11, 37.



between this form and the typical case of measles were observed.

Swelling of the glands in the neck and soreness of the throat, said by some to be almost diagnostic of r  theln, although entirely absent in some so-called epidemics of this disease,—symptoms which I have noted in some of my cases,—have been observed in epidemics of marked and severe measles. Thus, Swift,\* in an analysis of twenty-nine cases of decided measles with profuse rash, noted enlargement of the cervical glands in all but five, and inflammation of the throat was more marked than is usually the case in measles. It is therefore admitted by Str  mpell, and other advocates of the individuality of r  theln, that it may be impossible to make a diagnosis from a single case, and their faith in the separate existence of r  theln is founded on the fact that a previous attack of measles or scarlet fever affords no protection from this disease. As a second attack of measles in the same patient does sometimes occur, it is necessary to have under observation a number of cases before a diagnosis can be made between r  theln and a second attack of measles.

One of the most important contributions to this subject, and one which seems to prove the separate existence of r  theln, is a description by Dr. C. Haig Brown† of successive epidemics of r  theln and measles at Charterhouse School, in England. From notes on 159 cases diagnosticated as r  theln, occurring at the school, it was found that

5 had previously had r��theln (?), 154 had not.			
144	"	"	measles, 15 " "
42	"	"	scarlatina, 117 " "

Of the 5 supposed to have had r  theln, none had had measles; of the 15 who had not had measles, 14 contracted measles a few months after their attack of r  theln. In other words, 158 of the 159 cases were twice sick with an infectious disease, one of these attacks being undoubtedly measles; the other, although it resembled measles in many particulars, we must admit was a distinct disease, which is called r  theln, unless

\* *New York Med. Journ.*, 1886, xliv. p. 602.

† *British Med. Journ.*, April 16, 1887, p. 826.

we suppose that two attacks of measles in the same individual could occur in so many cases.

An epidemic of measles occurred at the same school five months later, and of 60 cases,

1	had	previously	had	measles,	59	had	not.
19	"	"	"	rötheln,	41	"	"
20	"	"	"	scarlatina,	40	"	"

Also very interesting is the fact, noted by Dr. Brown, that about one and a half years before the rötheln epidemic described above there occurred a small epidemic of thirteen cases where the symptoms exactly resembled those of the large rötheln epidemic; but the rash, instead of closely resembling the eruption of measles, was exactly like the eruption of scarlet fever. Five of these had previously had scarlet fever, and not one of them contracted rötheln a year and a half later, although nine were still in the school and exposed to the infection.

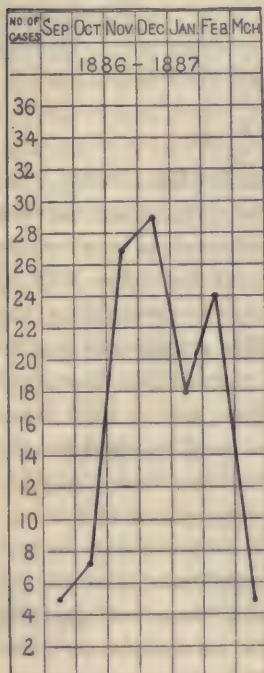
However inclined one may be to be sceptical as to the separate existence of rötheln, facts like these are not to be put aside, unless we suppose that in some epidemics, and not in others, measles attacks equally those who have had measles before and those who have not. Have we a right to make this assumption?

To return to my own cases: Of the 76 who were attacked in this epidemic only 4 had previously had measles; while of 73 children exposed to the disease, and who did not acquire it, 66 were protected by a previous attack of measles. Therefore we must conclude that the present epidemic was one of measles.

That the previous attacks were in reality measles and not rötheln, supposing such a disease to exist, I think there is no question, for most of the children had been sick in an epidemic that began a little over a year before, the undoubted measles character of which I had been able at that time to observe in the adjoining district at the North End.

Of 115 cases of measles, observed at that time,—represented in the following chart,—nearly all ran a typical course, with profuse rash and elevated temperature. Four cases died

of broncho-pneumonia, two of the deaths occurring within a few days of the appearance of the rash.



Although the general character of this epidemic of 1886-87 was severe, I have notes of a case which occurred in February, 1887, at the time the epidemic was at its height and in a house near others where typical cases of measles were plenty,—a case which closely resembles the description given of r  theln.

Kate L., seven years old, who had had measles two years before, was found one morning, without any premonitory symptoms, covered from head to foot with a measles-like rash, and at the same time cough and conjunctivitis appeared. When seen by me, on the following day, the rash, which had begun to fade, was found to be a macular and papular eruption, the macules being of the size of small peas, and in places closely confluent, so as to form erythematous

patches. There was no inflammation of the fauces, and the patient was up and about, feeling moderately well, the temperature being 100.4°. On the following day there was no trace of the rash or of the conjunctivitis, and the temperature was normal.

Being unable to make a diagnosis of r  theln from a single case, and on account of the great prevalence of undoubted measles in the neighborhood, I considered this a mild case of measles, examples of which were so common in the epidemic of 1888. It is interesting here to note that, in the four cases observed in 1888, in their second attack of measles, in one case only was the prodromal stage less than three days in duration. In two cases the rash was slight and the course of the disease mild, in the other two the rash was profuse, and the course of the disease of moderate severity.



At the same time that the mild measles epidemic of 1888 was at its height in Boston, a number of cases of an eruptive disease occurred at the McLean Asylum, in Somerville, near Boston, for the facts in relation to which I am greatly indebted to Dr. Horace M. Locke and to Dr. A. C. Stanard. One of these cases I had an opportunity of seeing through the kindness of Dr. Stanard.

Ten cases occurred at the asylum in March and April, 1888, all but one having had measles before; all were adults. In six of these the eruption was the first thing noted, in the others, prodromal symptoms were slight and of brief duration. The eruption lasted three days in 3 cases, four days in 2 cases, five days in 1 case, and six days in 1 case. Swelling and tenderness of the glands in the neck were noted in several. The symptoms in all cases were moderate. The stage of incubation varied from eleven to eighteen days. The only one of these cases that never had had measles was subsequently exposed to undoubted measles, and passed through a typical attack.

The case seen by me, an adult, who had had measles in childhood, felt poorly while in Boston on the morning of March 22, and found at noon a rash appearing on his face. This soon spread over his whole body; he had slight conjunctivitis and slight cough, occasional vomiting, and a feeling of sore throat; his temperature reached 102°. When seen by me, on March 24, the patient was covered with a macular and papular eruption, in places confluent in irregular patches, exactly resembling a moderately profuse measles rash. His abdomen showed only a few scattered pea-sized macules; but when exposed to the air, crescentic spots appeared, which became more or less confluent, forming a nearly continuous erythema, with little spots of clear skin. The fauces were reddened, and a few papules were to be seen on the palate; the tonsils were not swollen. The glands of the neck and groin were slightly swollen and tender. The source of infection for the first case, unfortunately, could not be determined. Measles was then prevalent in Somerville, and it is said that r  theln was also diagnosticated.

Although these ten cases occurred at the time of an epi-

demic of measles in a neighboring place, the fact that all had had measles, with the exception of one patient, who was subsequently sick with undoubted measles, in connection with the fact that the disease in all was mild, with little or no prodromal symptoms, would lead us to diagnosticate these as cases of r  theln.

Let us suppose, however, that only five of these ten cases had had measles before, what diagnosis should have been made? We might say, with truth, that cases exactly resembling these in symptoms were to be seen in Boston in the midst of a measles epidemic, and also that second attacks of measles did sometimes occur, and that, therefore, the diagnosis in this case was measles with an unusually large proportion of second attacks. Where, then, shall we draw the line? How many second attacks are allowable in an epidemic before we trespass on the ground of r  theln? Such questions make, I think, a *reductio ad absurdum*.

From these somewhat confusing studies I draw the following conclusions,—very unsatisfactory, it is true, as they end with a question I cannot answer:

1. Epidemics of measles occur in which many of the cases exactly resemble cases described as r  theln.

2. That these cases are also found occasionally in severe epidemics of measles.

3. That glandular swellings and sore throat are sometimes found in cases of undoubted measles and are sometimes absent in cases called r  theln.

4. That the symptomatology of r  theln is not distinct from that of measles.

5. That it is therefore impossible to make a diagnosis of r  theln from a single case.

6. That the only ground on which the individuality of r  theln rests is the fact that previous attacks of measles afford no protection from this disease.

7. That as second attacks of measles do occasionally occur, we cannot, from our present knowledge, make the diagnosis of r  theln, unless—as in the Charterhouse and Asylum epidemics—we meet with a series of cases in patients, many or most of whom have previously had measles.

8. That the impossibility of knowing how many second attacks may occur in a given epidemic of measles makes this proof of the separate existence of r  theln somewhat problematical, and gives rise to the question, Is it possible that in some epidemics and not in others a mild form of measles attacks equally those who have had measles before and those who have not, and affords afterwards no protection from measles? In other words, is r  theln merely a mild form of measles?

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## Clinical Memoranda.

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### MASTURBATION IN CHILDHOOD, ETC.—A CLINICAL LECTURE.

BY A. JACOBI, M.D.,

Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, in New York.

NOT having had an opportunity myself to hear much about the little patient before us, we will now draw out its history somewhat in detail. From what I have learned about the case, I judge that it is one of an interesting affection, yet one to which very little attention had been given until a relatively short time ago. The history is that, as early as in the third month of her age, the child, a girl now nineteen months old, was noticed by her mother to make certain movements of a voluntary character. Whenever she had an opportunity, she would bring the thighs together and rub them, perspiration would appear on her face, and afterwards she would be somewhat exhausted. This occurred several times a day, but never when the child slept. The greatest number of times that this would occur during the course of the day was about ten.

The diagnosis of such cases is now made more frequently than it was before I called the attention of the profession to the frequency of masturbation in very young infants thirteen years ago.\* When I wrote my paper, at that time, I received a number of letters with regard to it, more, however, from superintendents of institutions than from medical men. One of the best known men in the State came to me with his whole family, consisting of himself, wife, and little daughter of eight or nine months of age. He had written me that the child had convulsive attacks, during which it would rub its knees together, stiffen out, get flushed in the face, begin to perspire, and with a long expiration would come to, and ap-

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\* *Jour. Obst. and Dis. of Women and Children*, Feb. and June, 1876.



pear exhausted. I told him to bring the child down, for although I had little doubt about the diagnosis, yet I wished to be sure of it. It was certainly a case of masturbation, and nothing else. The movements which he mistook for convulsions, and to be involuntary, were voluntary, and with the perspiration, the exhaustion, and so on, were simply connected with the act of masturbation. It is true the diagnosis was made under difficulties, for when I made it, the mother flew at me as if I had told her that her daughter was a street-walker. She took it as an insult. Fortunately the man had more sense, and the result was, they did what I told them,—to watch the baby, and when it began the act by crossing the legs to check it by pulling the knees apart and giving it a shaking. In the course of six or eight months they had broken the baby of the habit.

What will produce masturbation? Anything which will rub the parts or irritate them may produce it. It is a habit now and then contracted by little children. It may be contracted through nurses who do the rubbing for them simply to keep them quiet. Sometimes it is the result of gross ignorance, sometimes of mischievousness. A number of babies contract the habit from irritation of the parts due to some anatomical lesion or local irritation in the neighborhood. In a boy the irritation may be due to the prepuce; or the itching produced by degenerated epithelial cells under the prepuce may cause him to scratch and manipulate the parts, and thus develop the habit. Or the irritation may arise from some condition of the bladder, as a catarrh or the presence of a stone, or even from a stone in the kidney. The irritation may exist in the neighborhood of the perineum, anus, or rectum. The presence of a catarrh of the rectum, of worms, or of a fissure of the anus, may bring about the habit. Fissure of the anus is by no means infrequent in very young infants. It is very difficult sometimes to find when you look for it, but in a number of cases you can discover it easily. When there is pain during the evacuation of the bowels, and the presence of just a trace of blood mixed with the feces, you may suspect fissure. A fissure *in ano* will produce irritation in the whole neighborhood, resulting not only in painful evacuations, but in affections of the urinary organs. Not infrequently the tenesmus of the anus is communicated to the neck of the bladder, and therefore it is that a number of cases of difficult micturition cannot be cured by measures directed to the urinary organs, but will disappear on correcting the trouble in the rectum. It is well to remember, whenever you have a case of tenesmus of the rectum, that the fault may lie in the urinary organs, and

when you have a case of tenesmus of the bladder, that the fault may lie in the anus. All such conditions may lead to masturbation simply by causing the baby to manipulate the part. In a number of cases the children are predestined to the habit. I remember the case of a little girl, aged seven years, who pretended to have been outraged by her teacher. She was so precocious that she knew all about it at that early period. She had been masturbating previously, as I found out afterwards. It was a case because of which I was called to court. On examining the child I found the *mons veneris* not exactly covered with hair, but a few stray hairs here and there, and the vulva pretty well developed, showing that her precocious manipulations and claim to having been outraged really resulted from premature physical development. Such a child cannot help obeying its impulse. It is predestined to the act observed in that child. What, do you suppose, will become of it when it reaches the age of fourteen or sixteen.

I ought to say that the changes found in the genital organs of infants or children who masturbate may not be the cause, but frequently are the result of manipulation. Manipulation will certainly swell the penis, particularly the glans, and will swell the vulva and redden the parts. Thus you may often have difficulty in saying whether the redness of the vagina and swelling of the vulva or penis are the cause or the result of masturbation. In this case it is observed that the baby has a large vulva. A baby which has been masturbating as frequently as she has, and manipulating the parts, must be expected to have a large vulva. But it may be that the vulva was large from the beginning, or that there was a little vaginal catarrh at the commencement which set up the habit. When asked whether the baby had a discharge from the vagina, the mother replied that when it was about twenty-four hours old, or the third or fourth time after the napkins had been changed, they were noticed to be stained red with blood. This was repeated perhaps four or five times, and subsequently the napkins were simply wet, not stained. She has noticed no white discharge, or discharge of any kind since. The physician said it came from the kidney, but blood coming from the kidney and becoming mixed with the urine is decomposed, and would not stain the napkins red in the manner the mother has described. The blood must have come either from the vagina, urethra, or bladder. There could not have been a marked lesion, for it did not persist. The doctor says it was a head presentation, forceps delivery. There may have been a congenital polypus in the urethra, as I have seen a few times, or there may have been a kidney stone which came down the first day



after birth, which would offer ample explanation of what we now see. Stone in the kidney of small babies is a thing not unheard of. Once, when I frequently made autopsies on little babies, I found, in a series of forty, six renal calculi. That was an unusual experience; yet I have seen some cases since. They were all babies under a year; most of them under seven or eight months. Such cases are the result of what occurs in the normal kidney of the newly-born, for if you cut through one, between the second and twentieth or twenty-second day of life, you will find that the pyramids have a peculiarly orange or yellow discoloration. That discoloration can be washed out, and is found to be composed of uric acid in crystals, some times in large masses. They are sometimes present on the diapers of babies from a few days to two weeks old in large quantities. Sometimes the irritation caused by these so-called uric-acid infarctions within the kidney of the newly-born is so considerable as to cause hemorrhage. Now and then a nephritis results before the baby reaches the fourth week. As bearing on this question, we elicit from the mother the statement that the baby urinates frequently, always in the diaper, and that it frequently has screaming spells, as if in pain. Now, it is quite natural, when an adult has a renal calculus which leaves the kidney and passes down the ureter, that he should have a great deal of pain, and should scream and send for the doctor in great haste, want a morphine injection, and so on. That may occur several times in a day, it may occur several times in a year. That is not only natural in the adult, it is also natural in the very young. You will find babies scream when they are supposed to have intestinal colic, still it may be due to gravel or renal calculus. When a baby has severe screaming spells, it is worth while to first learn whether there is reason for the belief that they are due to intestinal colic. If no good basis for that presumption can be found, it is then certainly right to suspect that the screaming spells are due to renal pain and not to intestinal pain. A renal calculus may just as well be the cause of irritation in the glans penis and of the habit of masturbation as a calculus in the bladder. We will examine this baby's bladder. In introducing the instrument the point should be bent almost to a right angle in order to touch the nooks and corners inaccessible to the straight or moderately curved instrument. We can feel nothing in this case. The labia we find to be rather large, but that may be due to the irritation caused by the habit. The vagina is not particularly red. The fontanels and teeth show that the baby is not more developed than babies usually are at her age.



What can be done for the prevention of masturbation? If there is an anatomical lesion, that must be removed. For instance, if there be a stone in the bladder, certainly it should be removed; if there be catarrh of the vagina or of the bladder, it ought to be cured; if fissure of the anus, that should receive treatment, particularly by stretching the sphincter, as is done in the adult; if there be small worms, the oxyuris, you will have to expel them. You know how difficult it is to expel the oxyuris (pin-worm), for it does not always live in the rectum. Its home is in the colon, and it only migrates down to the rectum, and you can wash out only those which come down there. For this reason the oxyuris is very persistent, very difficult to get rid of. But when the rectum is kept clear, the irritation of these worms is but slight. If there be a stone in the kidney, how shall you get rid of that? It is one of the most difficult things in medical practice to get rid of. You ought not to cut it out unless there be an abscess. The only thing to be done is to try to cause its solution. But what will cause uric acid—of which it is composed—to dissolve? First, give plenty of water to wash out the uric acid, and thus prevent the stone from growing larger. Second, uric acid is dissolved by alkalies, as sodium and potassium. One good way is to give plenty of Seltzer water, Vichy water, bicarbonate of sodium, and so on. Lithia is a good solvent of uric acid. Lithia mineral water contains a trace of lithia, and therefore may be given. But whenever you get lithia water, Buffalo lithia water or any other kind, you will do well to add something to it. The best thing to add to sodium waters or lithia waters is potassium.

From your lessons in chemistry you have learned that uric acid has a much greater affinity for potassium salts than for sodium salts, and in order to dissolve uric acid in cases of renal calculi or of gout it is better to use a potassium salt; for instance, bicarbonate of potassium in preference to bicarbonate of sodium.

In order to break the child of the habit, if we should not be able to find an anatomical cause which can be removed, it will be necessary to watch it very carefully. It must not be allowed to be in bed awake. It must be put to sleep on the arm and then laid in the bed. As soon as it awakes it should be taken up. And whenever it begins to make the peculiar movements which the mother has described, as soon as it brings the knees together and begins to rub them, it should at once be stopped. I have often seen babies, two or three years of age, sitting on the floor, begin to rub the legs together until all the sexual orgasm which takes place in the adult is present.

Whenever that begins, the baby ought to be taken up and shaken thoroughly, and punished.

Whenever hypnotics or nerve sedatives are indicated, the bromides will probably be found best to allay the sexual irritation when it has lasted some time. No matter from what cause the habit has originated, there is always a good deal of sexual irritation with it, so that some children, when the first cause has been removed, will continue the habit, just as a boy or girl of ten, fourteen, or twenty years of age will do, and for the same reasons, with the same voluptuousness, and with the same bad consequences. One of the remedies which can be used in such attempts at sexual orgasms is camphor, either pure or monobromated camphor. A baby may take three or four grains every day continuously for a long time. It may take a grain and a half or two grains of camphor when going to bed, with or without bromide of potassium. Lupuline has been given a good deal. The fluid extract may be administered to a baby in doses of two or three minims. But I think a bromide, a mixture of potassium and sodium perhaps, would procure sleep, or, at all events, secure rest from the bad habit while the baby is asleep. The bowels should certainly be kept open. This baby is constipated; but constipation did not exist soon after birth, so that it could not have been the primary cause. But, at all events, it is a complicating cause, and ought to be removed. The constipation may not affect the rectum at all; it may be in the sigmoid flexure, for the sigmoid flexure in a baby is very long, being three or four times as long relatively as it is in the adult. When constipation exists, a good deal of hard fæces will accumulate in the baby's pelvis, press down upon the uterus and appendages, and upon the nerves, and thus, by irritation, cause a sexual orgasm. Just as in young men subject to nocturnal emissions, it is necessary to insist on regularity of the movements of the bowels and of emptying the bladder, especially just before going to bed, so in these little patients we must insist on the same health laws.

#### CARDIAC DISEASE.

Our assistant has obtained the following history in the next case:

A boy, twelve years of age. His mother is rheumatic. He has always been well, with the exception of measles, until five years old, when he was struck on the head by a kerosene can, which fell a distance of two stories and three-quarters over a wall. He has the wound on the head now. He became unconscious, and remained in that condition a short time. Three or four days after this accident he

was seized with nose-bleed. This he has had more or less ever since. A year ago his feet began to swell, and remained swollen a week. A month ago he had nose-bleed in the night, which was very profuse. Four months ago he began to cough. He complains of dyspnoea upon the least exertion, and of palpitation. His sight troubles him at times; he says it almost completely leaves him for a few moments. The appetite is good; the bowels regular. Physical examination shows a double aortic and, I think, a double mitral murmur; presystolic thrill; the apex-beat diffuse; forcible but regular action of the heart; marked pulsation of the carotids; pulse disappears at the wrist, but is present at the elbow. There are physical signs of bronchitis.

The heart-beat, you will observe, is visible over a very large surface. Is that necessarily an indication that the heart is diseased? No; it simply means that more of the heart is touching the chest walls than usual. That may be a fault of the heart or it may be a fault of the chest wall. If the chest wall were flattened down in this region the most normal heart would give an expansive heart-beat without any hypertrophy. Therefore, whenever you find an extensive heart-beat, always ask yourself whether the condition of the heart is at fault or the chest. Here it is the former. As stated in the history, we hear a double aortic murmur, one systolic and the other presystolic, located at the second right intercostal space. To show that it is not mitrally transmitted, we can hear it over the carotid, and in some instances it is heard posteriorly and down the thoracic if not the abdominal aorta. You can hardly be sure that the murmur is aortic unless you hear it over the carotid too. That would indicate hypertrophy, if any existed, in the left ventricle. Here the area of dulness is extended to the left and right, and downward, indicating that both the right and left ventricles are dilated. There is here also a systolic murmur over the mitral valve, indicating incompetency. Along with the dilatation is marked hypertrophy.

What are the indications for treatment in this case? You reply that the heart is beating altogether too forcibly, constituting the so-called cog-wheel heart. You should consider the radial pulse. It is said to be absent. At present, however, we can feel it, although it is very feeble. That would prove that, although the heart is apparently beating forcibly, yet it is not sufficiently strong to drive the blood through the vessels. There is a great difference between the pulse at the wrist with the arm elevated and when it is down. The heart's action is tumultuous rather than strong, and therefore the arteries throughout the body are poorly supplied. The body looks anæmic. Even if he had a large amount of blood, it would not circulate through that stenotic aorta. What would



you do to overcome the stagnation of blood in his circulatory system? You reply correctly that the heart should be made to beat more slowly and more forcibly, and to accomplish this you say you would give digitalis and convallaria. Four minims of good fluid extract of digitalis every day would suffice, particularly if it were combined with another cardiac stimulant, as caffeine or convallaria. The amount of caffeine in that case would be probably four to six grains a day, or sparteine might be given with the digitalis, say a quarter of a grain three times a day, perhaps a little less or possibly more. I think one grain in twenty-four hours would not be too much for this boy.

What else would you do to cause the blood to circulate more vividly and bring it to the lungs where it can become oxygenated? You say he might inhale oxygen gas. Very true. What else? In what way, besides stimulating the heart more forcibly, can you cause better circulation in the surface? "Cold water,—cold bath, or friction." Yes, rub the surface thoroughly. Begin with the use of a little alcohol and tepid water; after a time use cold water. Nothing will so improve the general circulation as to improve that of the skin.

We have here another patient, a little girl, aged thirteen years, whose history is similar to that of the boy's. The heart is enlarged, and there is a double aortic and mitral regurgitant murmur. The apex-beat is an inch and a half to the left of the nipple.

Here we have to deal with a practical difficulty. The little girl lives very far away; she is seriously ill; we want to supply her with medicines; to give her digitalis; and yet we fear that digitalis will affect her stomach after a time. Under its use she may begin to vomit, and then, if she has any sense left, she will discontinue it. But in that case she would be without medicine for her heart-trouble. What can you do to secure the effect of the drug and not make it necessary for her to discontinue its use? Here practical experience becomes of value. If you were to give her a sufficient quantity of the infusion of digitalis to last her four or eight weeks, or should tell her to have the prescription repeated, and should tell her to take a sufficient quantity of it to meet the indications, within a fortnight she would begin to vomit, and that would be the end of your medication. If you were to give her a corresponding amount of the tincture you would probably have a similar result. To prevent such effects you would have to give such small doses that you would get no benefit. What preparation, then, can you give longest in sufficient quantity

to produce the desired effect? I think she could take five minims of good fluid extract of digitalis every day for two, perhaps three, weeks, but the one preparation which she could take longest is the solid extract. She could take it in the form of a pill. A good many remedies which are not well tolerated a long time in the liquid form will be well tolerated in pill form. For instance, arsenic. You can give Fowler's solution a certain time, but most people will not bear it longer than a few weeks. You can give a solution of arsenite of sodium a great deal longer, but that also becomes disagreeable to the stomach after a time. The arsenious acid in solid form can be given in corresponding doses for months and months, and you can be fairly sure that it will be well tolerated. The same is true of the solid extract of digitalis. This girl could easily take half a grain of solid extract of digitalis three times a day for four, six, or eight weeks, probably feeling the favorable effect of digitalis and not being annoyed by its disagreeable effects when administered in the fluid form. But in order to be quite sure of producing no disagreeable effects, it is just as well to give a little less of the digitalis and add something to it which will work in the same direction. Digitalis is the only one of the cardiac tonics which has a cumulative effect which is now and then very disagreeable. By its action upon the pneumogastric it produces vomiting and nausea. Giving it in smaller doses, you can add sparteine. She might take regularly, a long time, three pills daily—consisting altogether of one grain, or one and a third, or perhaps one and a half—of the extract of digitalis, and the same quantity of the sulphate of sparteine. If the patient were suffering from intestinal constipation, colocynth or aloes might be added to the pill. That is, then, what I should do in a case of this kind, which we are not likely to see again for a few months.

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## A CLINICAL LECTURE.

BY OLIVER P. REX, M.D.,

Clinical Lecturer of Pediatrics in the Jefferson Medical College, Philadelphia.

CASE I.—Samuel A., aged eight years, fifth child, born after natural and easy labor. While apparently healthy, the first incisor teeth were not cut till the age of sixteen months, and then the rest followed regularly and rapidly without constitutional disturbance. As a rule, the first incisors are cut easily, but the appearance of the others is frequently attended with a diarrhoea, which may be very difficult to check. It is reflex in origin, and disappears upon the eruption of the tooth. So far the history savors of rachitis, in which late cutting of

the teeth is one of the symptoms: sometimes only one tooth appearing in the first year, and sometimes, even, there are none in two years. This child, however, walked fairly well at thirteen months. He did not talk till two years old. He has now some difficulty in pronunciation; "c" and "w" he cannot pronounce properly. "C" is sounded like "z," and for "b" he has several equivalents. On this account he is morbidly sensitive to the ridicule of his school-fellows. On the other hand, he is bright and active, is up early in the morning, and is anxious to learn; but he readily forgets from day to day.

This history embraces a condition which Dr. Angel Money puts down under the head of *backwardness*; a very valuable term; not, however, a favorite with American authors. Here the condition is associated with forgetfulness. We find, as a rule, forgetful children are quick in other directions, learning games and other childish pursuits with readiness. Backward children learn slowly. They are slow in sitting up, in learning to walk, and to dress themselves. The education of a child depends largely upon its surroundings. Intelligent parents will help the growing minds of their children and teach them by careful study of their needs until by gradual steps they rise to higher planes of mental development.

It is a wise thing to take a child early and find out whether there be any defects of the special senses, whether deaf, dumb, or blind. Such defects are easily overlooked in a child, whose ignorance prevents it making known such an infirmity. Dr. Gould, of this city, reports the case of a boy of nine years, of intelligent and cultivated parents, who had not yet mastered the alphabet. Examination of the eyes revealed a high degree of astigmatism, which had prevented his fixing the eyes upon the letters long enough to learn their forms. This was corrected by glasses, and in less than a year he had outstripped the others of his class. In another case, a brother and sister, children of cultured parents, were placed in the same class at school. The boy went ahead rapidly, but the girl, apparently as intelligent as her brother, failed to pass the year's examination. She was found to have defective sight, and as soon as she had been supplied with glasses, she explained that she had previously never known what it was to see the black-board. Deaf-mutism is another cause of apparent backwardness.

This child is backward principally from defective articulation, but there is also deficiency in the speech tract. This must be overcome by careful and patient training and repetition by the mother. He ought to be kept at home to shield him from the ridicule of his fellows. In general, if a child like this can pronounce only one word, time and perseverance will overcome the defect entirely, or, at least, to a very great extent.



CASE II.—Alice A., aged six years, second child of three. She was perfectly healthy up to and after the eruption of her first two teeth at seven months. During the cutting of the eye-teeth she had one convulsion, which is described as having come on suddenly while she was sitting up in her cradle, attended with loss of consciousness, general clonic movements, and frothing at the mouth. This lasted a few minutes, and was succeeded by sound sleep for several hours. The next day she was all right. She had no further trouble till the cutting of the stomach-teeth, when she had another convulsion, and then remained free until the age of three years. From three to four she had convulsions at intervals of about three months. Her health did not suffer, appetite remained good, and bowels regular. Under treatment ceased to have further seizures, and remained well until quite lately. They now occur about every two weeks, but are much milder and of shorter duration than at first. She seems to know of its approach, and can usually gain a place of safety before the convulsion begins. The family history is good, but the mother suffers from neuralgia.

This case, therefore, resolves itself into one of inherited neurotic disposition, which in other members of the family might appear as neuralgia, tic douloureux, or graver epilepsy. The weak nutrition of the cortical cells of this child's brain was first exhibited in the motor disturbances during the irritation of teething, which, at three years, took on the type of epilepsy gravior. Treatment then modified it to a petit mal. The seizure is not brought on by ordinary emotions, but when near the time of recurrence, it seems that a convulsion may be precipitated by excitement. She eats freely, especially at night. Between times she is well, but is nervous and restless and sleeps badly. This suggests the question how far there is a choreic condition associated. The sex, age, and color (white) of this child are most favorable for the development of chorea, which, with rheumatism, is now believed to occur under conditions that in more pronounced degree occasion epilepsy. For the present, however, this may be left out of consideration.

In regard to treatment, the first thing, as in all children's diseases, is to improve the hygienic conditions. Chorea is always associated with constipation, and frequently also is epilepsy. The bowels must be cleared out once daily. Meat and all pastry and sweets must be interdicted, but the diet should be highly nutritious and very digestible, with the lightest meal at night. Next in importance is plenty of outdoor exercise. Every other night a warm sponge-bath, with the addition of a little rock-salt to the water, will be of benefit. In the way of drugs, Trousseau has said that strychnia stands first and zinc next. In intensely neurotic patients in this condition zinc has proved a most valuable agent. The phosphide of zinc in dose of one-sixteenth grain four times daily will be given, to be increased gradually to one-twelfth or one-

tenth grain. If it be found that the bath promotes sleep and quiet, as it usually does, it may be given for a while every night.

CASE III.—Robert G., aged three years. He has had a cough for the past two months, which began, as his mother thinks, like a whooping-cough, in the paroxysms of which he seemed finally to lose his breath. Laryngismus begins with the spasm: here we find the cough first. It occurs every few minutes during the day and now is more frequent at night than in the early stages, paroxysms occurring three or four times during the night and always waking him up. Examination now reveals normal respiration, with a few large râles posteriorly at the bases. It is always well to make a complete examination of the lungs in cases like these, for often, after a protracted cough of this character, the upper portions of the lungs anteriorly become emphysematous.

The history is plainly one of whooping-cough of moderate severity. In this disease the early symptoms vary greatly. Sometimes it simulates measles, from the slight cough and watery eye. His first period may run on for from one to six weeks, but the usual duration is about twelve days. When the first period is very severe, the second stage may be quite mild; while, on the other hand, a very mild first stage may precede a very severe second stage; or, again, the whole course may be so mild that only a history of prevalence of the disease in the neighborhood will give a clue to its nature. In the second stage cough is much more frequent at night than in a common bronchitis. The second stage lasts sometimes one or two months, and then passes insensibly into the third stage of decline. A child that has had whooping-cough is very prone to catarrhal inflammation; and for some time afterwards a cough is apt to take on a paroxysmal character, which may make the mother think that the child has contracted the disease afresh.

Treatment in the past has included an endless variety of drugs. Belladonna certainly in many cases has a happy effect. But, as in all diseases of childhood, hygiene is very important. In an anæmic delicate child this very condition suggests at once cod-liver oil, and this will indeed be found the best medicine for its whooping-cough. But the sovereign remedy in this disease is antipyrin, in doses of a grain for each year of the age, given four times a day. If, in the course of a week there is no improvement, the dose may be given more frequently, say every three hours. As a rule, the dry powder alone or with a little sugar is preferred, but it may be given in solution with syrup of orange flower or syrup of tolu.

It is fair to believe that, as the child proceeds through the first and second stages of whooping-cough, there is established a spasmodic habit, which is manifested in the third stage.

Here the bromide of potash will often be of benefit. As to the rest of the treatment, let the diet be nutritious and regular, and see that a good night's rest is obtained. In the first stage there is much cough, and almost any expectorant mixture will suffice; but in the second stage there is added to the catarrh a spasm, and the night cough becomes very frequent and annoying. The sleeping medicine is therefore extremely important. While antipyrin or phenacetin is used in the daytime, a dose of bromide of potash or chloral should be given at bedtime, which may be repeated after five or six hours. At bedtime a warm bath of the temperature of 99° F. (which is closely approximated by a degree of heat which the mother's elbow can just bear) will be of benefit in procuring sleep. Sometimes the paroxysms are so violent that vomiting is induced. In such cases peptonized or sterilized milk will be better borne, and if vomiting becomes very frequent, a small dose of cocaine added to the antipyrin may be used.

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## ADHERENT PRÆPUTIUM CLITORIDIS AS A CAUSE OF CHOREA.\*

BY C. HENRI LEONARD, A.M., M.D.,

Professor of Medical and Surgical Diseases of Women and Clinical Gynæcology  
in the Detroit College of Medicine.

B., a girl, aged eleven years, of light complexion, not robust yet still with a history of previous good health before the attack of "nervousness," and with no history of rheumatism, was taken with the usual symptoms of chorea, and by the family physician ordered to be kept from her school-books, while good and constant doses of arsenic were prescribed, with a general iron tonic. Under this treatment she had times of feeling somewhat better, though the inco-ordination of muscular action continued.

The little girl's eyes seemed to present symptoms calling attention to them, and it was thought at one time that possibly some irritation of these organs might be the exciting cause of the chorea. They were carefully tested by a competent oculist, suitable glasses prescribed, and tonics kept up, the arsenic seeming to be a favorite remedy through several months of this expectant treatment. Finally, the patience of mother

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\* A paper read before the Wayne County Medical Society.



and physician being taxed to the degree that *something else* must be done, it was suggested that, as the disease had been so intractable, that the sexual organs might have something to do with the persistence of the nervous symptoms, and so the case was referred to me.

The mother informed me that an older, as well as a younger, brother had each been operated upon for an adherent prepuce, and asked if I supposed a similar condition could exist in the girl's case, and if so, might this not be the cause of the nervous trouble of her little daughter? I replied that such a condition might exist as an analogue to the condition described as being treated in the cases of the two brothers; but that I hardly thought this could be the cause of the choreic trouble in the little girl. This conversation took place when I was confined to the house, last winter, and I advised the continuation of the arsenic and iron until I was able to make an examination of the little girl. This was some two or three weeks afterwards, and during this time the choreic symptoms had only increased in their severity. The patient had now been troubled nearly a year, and at no period with complete relief. She was anæmic, fretful, and with all the usual symptoms of chorea, though not with the exaggerated movements sometimes seen.

The patient having been put upon a couch, and separating the thighs, it was noticed at once that the parts about the upper portion of the vulva were inflamed, swollen, and with the looks of quite marked irritation. Quite prominent bulging was at the glans clitoridis, and the prepuce was closely contracted about the glans clitoridis, presenting an opening not larger than the head of a pin. It was encircled with a bright scarlet ring of inflamed mucous membrane, and was exceedingly sensitive to the slightest manipulation. The clitoris was in a state of semierection through increased blood-supply, due to irritative congestion from retained sebum, or it was erected from the semisexual excitement due to this irritation. I did not ask concerning masturbation, for I did not think this to be a factor in the case.

The sides of the organ were grasped firmly between the thumb and finger, and the prepuce forced backward, when the opening dilated to the size of a pea and a ball of semisolid pus and sebum shot out from its concealment. The adhesions seemed to be broken down, as the prepuce was freely movable over the glans. During some further manipulation a small amount of pus oozed out, and the swelling about the glans showed itself to be greatly reduced.

I gave the mother a solution of permanganate of potash,

two or three grains to the ounce, to use as a wash twice a day. She was particularly directed to insert the nozzle of the syringe within the preputial opening, and to throw a barrellful within this cul-de-sac morning and evening. This she did for three or four days, when she telephoned—I was still unable to visit patients—that she thought the solution was becoming irritating, as the labia lower down were now redder than the clitoris was. She also said that the little girl was better of her nervousness than she had been for months, and that she was confident I had struck at the root of the trouble. I then directed a wash of boracic acid and borax in place of the permanganate solution, to use it pretty warm, and to be sure and not neglect the preputial opening. This the mother did for some ten days, when she telephoned that her little girl was, to all appearances, well, and asked if she could not leave off the injections. I allowed her to do this. A week afterwards the mother telephoned that the girl was getting worse again, that the region about the clitoris was becoming quite red, and she thought the trouble was coming back again. I redirected the potash permanganate solution, and the boracic acid and borax. This relieved the trouble within thirty-six hours entirely. Some four weeks after this I was called to the house to see if the clitoris needed any further treatment, surgically or locally, as the parents wished to be assured there would be no further return of the choreic symptoms from this source of irritation. The patient was found to be in every way much improved, the choreic symptoms entirely absent, the preputial opening found to be of normal size and color and sensibility, and the glans nowhere adherent to the preputial covering, a probe having been passed over the glans in all directions. As there was a little irritation about the lower portion of the labia, and extending within the vulvar opening, the mother was instructed to continue the borax until the redness at this locality had entirely disappeared.

The little patient, now six months from the time of forcible dilatation of the preputial opening, has remained free from her choreic symptoms, except as above narrated, and has, to all appearances, regained her usual health. At no time while I was treating her, after I had discovered the irritation about the clitoris, has there been *any* internal medication that was specially addressed to the choreic symptoms, these symptoms having been entirely relieved by the treatment addressed locally to the clitoris.

In the narration of this case I am not advocating that most, or even many, cases of chorea in young girls can be cured by addressing treatment locally to their genital organs; but would

wish to specially call attention of this society to the fact that it is best to examine these organs for irritation in each case of persistent chorea. Professor Sayre has long since proven the necessity of examining boys for preputial adhesion in certain cases of paralysis and reflex neuroses, and has shown the speedy vanishing of these symptoms on relieving the glans penis from the irritation due to an adherent or contracted prepuce. His successes in this class of cases have been phenomenal, yet no more so, in a single instance, than was mine in the case herein presented to you for your consideration. The physiological laws of reflex neurosis, and inco-ordinate muscular action, I hold to be the same in both sexes.

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## Foreign Correspondence.

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### LETTER FROM PARIS.

(Special Correspondence to the ARCHIVES.)

Infantile Urinary Troubles—Nervous Heredity—Chorea cured by Continuous Current—Treatment of Infantile Diarrhoea—Ophthalmia Neonatorum—Herps Zoster—Overstudy in School—A Prescription for Tænia.

*Infantile urinary troubles.*—Dr. Guinon has just published a thesis on this subject that we take some notes from. The infant's bladder contains, at birth, about seven and a half cubic centimetres of urine. This, of course, varies, but the quantity increases rapidly,—Camerer says, to forty-eight cubic centimetres the first day; and one hundred and thirty the second day, according to Cruse; and so it increases progressively to four hundred and seventeen cubic centimetres by the end of two months. This corresponds to six hundred and forty-five per thousand of milk ingested. During the second infancy, or childhood, the quantity of urine excreted is always superior to that of adults. Even at thirteen years of age the quantity is stated at thirty-six, while that of a grown man is twenty-four only. The number of micturitions also limit themselves as adult age is approached. \* The author finds that the principal troubles of micturition in children are spasms of the bladder or its neck, pollakiuria, incontinence of urine, and nervous polyuria. The first—spasms of the bladder—is



sometimes seen at birth, as the first dense urine produces a reflex irritation of the bladder, or more often a painful contraction of its neck, which retards the first evacuation of urine for one, two, or three days. A few warm baths, and a little hot water and sugar will arrange this trouble, or a rectal injection will relieve it rapidly. In the baby a little older it is a non-painful *pollakiuria* that is most often seen. (The French authors, after Professor Dieulafoy, use this term to indicate simple frequency of micturition, and it refers to a bladder difficulty, while polyuria means an exaggeration of the urinary secretion itself, and refers to the kidneys.)

But the most frequent of all such troubles is nocturnal incontinence of the urine, what the Germans call *enuresis nocturna*. Many are the theories that have been given to explain this symptom, such as the excitability of the bladder, feeble tonicity of the sphincter, etc., but all these ideas can be brought down to one,—*nervous heredity* or *hereditary nervousness*. The parents will be found to be of the nervous type, either from alcoholism, or they will have hysteria, neurasthenia, epilepsy of violent character, or some kind of nervous trouble, and in some cases one has to search the antecedents to find the etiology, but it seems always to exist. The child itself will have convulsions or night terrors, is often backward in walking, and has a special physiognomy. Emotion or fear at least is expressed by its looks; often it will be found to have a double twist or “*lick*” in the implantation of its hair; the teeth will be defective and irregular, and sometimes there is a defect in the formation of the genital organs, so that these patients are defective in organism or excitable in nature. Nocturnal involuntary micturition is a trouble, then, caused by a bad action of the nervous centres, and is not a local trouble. The normal state has a reflex contraction of the sphincter that prevents the emission outside of will-power, and the pathological state has a failure of this reflex to act. This trouble has nothing to do with any general or local malady, which must be eliminated first. As to treatment, the author depends on antispasmodics or tonics, at the same time he accepts the hypnotic suggestion proposed by Liebault; but so far he has not had much success with this last method of treatment.

*Treatment and cure of a case of chorea by the application of the continuous current.*—Dr. Gautier presented a case of a child of thirteen who was cured by the above method. The patient had had several attacks of St. Vitus's dance, and when seen, in July last, presented the following symptoms: All over the right side of the body there was an involuntary inco-ordination of movements which only increased when he

was ordered to stand still. He could not stand upright, and turned around, while the legs failed him and the shoulder, foot, and face trembled without his being able to prevent the movements. He could only speak with great difficulty, and did not seem to have any memory; he was very irascible, and could not sleep at night; he broke everything that was handed to him, and he could not be undressed without great difficulty; while he urinated in bed every second night. The general state was bad, and there was a slight atrophy on the healthy side. From the 16th to the 30th of July, six sittings of electric continuous current were given, *ascending* the spinal column. Then a week's rest was ordered, and from the 8th to the 15th of August one application was made, and from the 17th of August to the 14th of September two a week were given, and the case was cured. The current was not an ascending one, the positive pole being placed on the sacrum and the negative on the neck; the duration was eight minutes. The intensity of the current was six milliampères at first, ten afterwards, and twelve in the last series of applications. After six sittings he could write two lines, and after eighteen, he could write well and rapidly. (He never wrote before.) His weight, which was thirty-two kilogrammes, increased to forty, and the child was quite well; slept and walked about as other boys of his age. It may be stated that no internal treatment was used, and that he had been treated by other doctors with all the usual remedies, such as bromides, chlorals, sulphur baths, and antipyrin.

*Treatment of infantile diarrhoea* (Estival).—The treatment of this summer trouble of nursing babies is now recognized to take its inspiration from the parasitic origin of the disease. Most authors insist on a strict antiseptic treatment, and, first of all, efforts must be made to prevent the penetration of the germs into the digestive tubes of the infant. The careful washing of the nurse's teat with antiseptic solutions, and the same of the nursing-bottles, only in stronger solution, and sterilization of the milk used, is already a regular practice, and washing out the baby's mouth each time it nurses is another good habit. The treatment itself must attempt to destroy the pathogenic germs which are the cause of the malady. Two drugs are used,—naphthaline and calomel. The first must be given in a mixture that does not contain any fatty matters. The following formula is given:

R Naphthaline (pure), 1 gramme;

Mucilago acaciæ,

Chamomile-flower water, ãã, 40 grammes. M.

Sig.—Give a teaspoonful every two hours (shake well).

Or it may be given in rectal injection as follows :

R Naphthaline, 1 gramme ;  
Aqua destill., 50 to 100 grammes.

Boil this until it looks milky, and add boiling chamomile-flower water. 500 to 1000 grammes. Stir well and allow it to cool down to 37° C. (98½° F.).

To prevent the administration of naphthaline causing any poisonous accidents, no substances must be allowed to remain in the intestines that can dissolve it (fats mostly).

According to the recent experiments of Baginsky, when calomel and naphthaline are given together all the bacteria that resist the first are destroyed by the second, throughout the whole intestinal tract.

*Ophthalmia neonatorum*.—A good deal is written nowadays of the responsibility of some one, parents, midwife, or doctor, who throws a blind person on the community through neglect to attend to the treatment of the eyes of the newly-born babe. The greater number of people who have never been able to see were not born blind, but lost their sight by ophthalmia neonatorum during the days immediately following their birth. The ignorant class of parents are somewhat excusable, as the nurse will tell them that it is nothing but a little cold, and it is true enough that four out of five cases will get well with almost no treatment, but the fifth case will cause loss of sight. The simplest means of treatment consists, first, in prevention by insisting on a rigorous system of antiseptic during the accouchement; and the next is, to prevent the child, when born, from catching cold. Afterwards the practice in Paris is to have the child's eyes treated by a careful washing soon after birth. A rubber-ball injector is used, and the following solution, until not only the lids but also the entire conjunctivæ are perfectly clean : R Boracic acid, four grammes, to one quart of boiling water. The solution should be warmed every time it is used, and the lotions should be continued for five days after birth. If the disease shows itself, the lotions must be increased, and the eyelids prevented from sticking together by putting a little of this ointment on them : R Boracic acid, one gramme, to vaseline, twenty grammes. But the only sure method of cure is the nitrate of silver solutions : R Ten grammes of distilled water to twenty centigrammes of nitrate of silver is mostly enough ; but if much suppuration, the silver nitrate can be raised with advantage to thirty or forty centigrammes. Two drop-tubes are used of different colors here, one for the nitrate solution and one to follow it with a few drops of salt-water. No science is needed to evert the eyelid, and, indeed, it is not only not necessary to do so,



but often impossible. The child is turned so that its head falls between the doctor's knees, and he separates the eyelids with his thumb and index-finger of his left hand, and drops four or five drops of the solution between the lids, on the ball of the eye, then rubs the lids a little, and follows with one or two drops of the salt-water. Once a day is enough as a rule. In grown up people corrosive sublimate is often combined with the above treatment for use in purulent ophthalmia. A solution of one centigramme of the bichloride of mercury is used to twenty grammes of water, and instilled twelve hours after the nitrate solution is used. Every means should be taken to make known the facts and dangers of ophthalmia neonatorum, and it is a question here of inflicting penalties on persons who neglect treatment of such cases. Parents must be taught that it is their duty to inform a doctor, and doctors and midwives should be punished who neglect their duty in such cases.

*Herpes zoster (or zona) in children.*—Some cases, seen lately in Paris, of this complaint bring out the fact that has already been stated,—that is, that it is almost always *without pain* when seen in children, and with intense pain in adults. One case, a girl of eleven years of age, had the characteristic eruption about the third intercostal space. Two groups of vesicles were in front, and a group behind, near the shoulder, and it extended down the internal side of the left arm. The general health did not suffer. The affection is usually benign in children, unless there should ensue ophthalmic zona. The principal indication is to protect the vesicles, and this can be done by using a powder of starch, oxide of zinc, sodium salicylate, iodoform, or also boric acid and tannin as the physician thinks best, and covering the powdered surface with cotton wadding. A pomade may be used as follows :

R Vaseline, 50 grammes ;  
Hydrarg. bi-iodide, 5 milligrammes ;  
Ess. wintergreen and thyme, from one to two drops each.

No cauterizations or baths, or anything that would break the vesicles, should be recommended. If the child is not a quiet one, elastic collodion may be used to cover the part, and one to two per cent. of iodoform can be incorporated into it, before using. The internal treatment is arsenic in herpetic children, and salicylates, with bicarbonate of soda, in arthritic ones. If there is fever, sulphate of quinine; and if the stomach is out of order, ipecac and purgatives are used.

*Overstudy in the schools for children.*—After a long discussion in the Academy of Medicine on intellectual overwork in

the Paris schools a commission was appointed to study the subject, and certain reforms are proposed in the primary schools, by which the hours of study for children of seven to ten years of age is to be reduced by four hours, and those from eleven to seventeen years of age get two hours less work. The hours of recess, or recreation, are to be increased; three and a half hours are allowed now to the younger ones to play, and this is to be increased to six hours; while gymnastic exercises are to be introduced instead of the long processional walks formerly given to scholars. Four hours' recreation will be allowed the larger children, and they are to be taught gymnastics by professors for thirty to forty minutes every day. The hygienic part is not neglected, and the commission recommend changes in the sleeping-rooms in colleges, and that the alimentation should be improved. As to sleep, ten hours is now to be allowed to the children up to fifteen years of age; and nine after that age, which looks like a liberal allowance for the last.

For infantile tænia.—(Dr. Descroizelles.)

R Etherized oil of filix mas, 6 grammes;  
Calomel, 50 centigrammes;  
Pulv. sugar, 15 grammes;  
Aquæ destill., 15 grammes;  
Gelatin, q.s.

Give liquid foods (milk or beef broths) only for two days before giving this worm medicine.

PARIS, FRANCE, January 21, 1890.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Demme: *Strophanthus in Pediatric Practice*. (*An. de Obst. Gin. y Pediat.*, April, 1889.)

The author has tried this drug in twenty-one cases of disease of the circulatory and respiratory organs in children. The following conclusions embody his experience:

1. The tincture of strophanthus may be used in pediatric practice, but only in children five years of age or more. In some cases it will cause dyspeptic disorders. Not more than three drops should be given four or five times daily.

2. The predominant effect is the increase of the urinary

secretion, and a consequent diminution in the dropsical phenomena. This effect is not produced when the blood tension is normal or supernormal.

3. The second effect, which is sometimes surprising, is the relief which is obtained in respiratory troubles, in chronic nephritis, in bronchial asthma, and in whooping-cough; this being probably dependent upon increase in the blood tension.

4. Strophanthus will sometimes produce a satisfactory effect when digitalis fails to operate; at others the best results may be obtained by combining the two drugs. Digitalis should be preferred when a rapid effect is desired.

5. The prolonged administration of strophanthus did not produce, in the author's experience, a cumulative effect, nor was it observed that its efficiency was diminished.

A. F. C.

**Weis: Subcutaneous Injections of Chloride of Sodium in Acute Anæmia and Cholera Infantum.** (*Rev. Mens. des Mal. de l'Enf.*, February, 1889.)

The author's investigations upon this subject have led him to the following conclusions:

1. Subcutaneous injections of chloride of sodium constitute a method of treatment which is easy of application and absolutely harmless, if practised with antiseptic precautions.

2. In acute anæmia the results which are obtained, by this method, are surprising. In all cases in which, for any reason, intravenous infusion is contraindicated, subcutaneous injections may be substituted with success.

3. The salt solution should be of the strength of six-tenths per cent., and to it may be added a small quantity of alcohol or rum. The quantity to be injected will vary with the requirements of the case.

4. In chlorotic individuals the quantity of the solution to be injected should not greatly exceed twenty-five grammes, for in such individuals the blood-vessels, on account of their contracted lumen, and also on account of the elasticity of the walls of the vessels, will be readily stimulated by the addition of a relatively small volume of fluid. Such patients readily bear hemorrhages which are relatively abundant.

5. In acute anæmia, consecutive to hemorrhages occurring in the course of typhoid fever and other infectious diseases, and in all cases in which there may be degeneration of the cardiac muscle,—for example, fatty degeneration,—the quantity of liquid injected should not be abundant, for the forced labor which would thereby be suddenly required of the heart might have serious consequences.



6. In one case of collapse, in the course of infantile cholera, an injection of thirty to fifty grammes had a reviving effect; but many observations are necessary in order to determine whether this means of treatment may be adopted as a life-saving measure.

7. In infantile cholera injections of chloride of sodium should be made before collapse has reached a great degree, and before the troubles in the circulation have become irreparable. It is necessary to make the injections with the very first signs of collapse, and to repeat them as often as phenomena of depression are observed.

In addition to subcutaneous injections it is necessary to use, in acute anæmia and in collapse following infantile cholera, all the ordinary excitants according as each is indicated.

A. F. C.

Dubousquet-Laborderie: Treatment of Whooping-Cough with Antipyrin. (*Le Concours*, March 16, 1889.)

The author agrees with Geffrier, Jenser, Solenberger, Friedländer, and others, in the value which they have placed upon antipyrin in the treatment of whooping-cough. The drug acts upon the essential elements of the disease,—the catarrh, the specific character, and the nervous element; but the author was induced to use it on account of its depressant action upon the nervous system. He has used it in ninety-four cases, and in seventy-one the effects were very appreciable. Under old methods of treatment a serious case of whooping-cough lasted forty or fifty days; under the antipyrin treatment, it has been reduced to eighteen to twenty-five days. Not only has the duration been lessened, but also the gravity and the frequency of the paroxysms. No accidents were observed in the author's cases, and no injury from the treatment was evident in those cases which were complicated with broncho-pneumonia or capillary bronchitis; a cutaneous eruption, lasting a few days, occurred in two cases, and in several others there was gastric disorder, which might have been caused by impurities in the drug. The dosage should be thirty centigrammes to one gramme daily for children from one to three years of age and two to four grammes for older ones. It may be combined with Vichy water and some aromatic syrup.

A. F. C.

Pierron: The Treatment of Pneumonia in Children. (*Journ. de Méd.*, March 17, 1889.)

The medication which is proper for children with simple acute pneumonia is not the same for all periods of the disease,

but should be divided into three systems, corresponding to the development, persistence, and decline of the disease.

In the period of development and fluxion the treatment should be symptomatic; but one must be careful and not draw too much upon the strength of the patient with the means employed. With very young children, instead of the chill at the beginning there may be convulsions or delirium. At such a time a coffeespoonful of the following mixture may be given every ten minutes until the accidents cease:

	Grammes.
R Potassæ brom.,	1.50;
Tinct. moschi, gtt.	vii;
Syr. chloral,	15.;
Aq. aromatici,	45.

This treatment should be followed by energetic external revulsive medication. Cataplasms, alternating with dry cups or a few leeches, will relieve the congestion with the pain in the side and the dyspnoea. An emetic will relieve the stomach, lower the temperature, and relieve congestion. Internal medication should consist of expectorants, revulsives to the digestive apparatus, and stimulants of the pulmonary tissue. The following formula is suggested:

	Grammes.
R Kermes min.,	.25;
Syr. ipecac.,	12.;
Syr. belladonnæ,	20.;
Infus. violets,	120.

Give a dessertspoonful every hour, intermitting for a few hours should nausea be present.

As to diet: very young infants should be fed only at the breast. Older children may have bouillon and thin soups, weak Bordeaux wine, and occasionally black coffee, which acts as a stimulant to lung tissue. In the second period of the disease, one has to combat the weakness, the febrile delirium, and the emaciation of the patient, and the following formula is recommended:

	Grammes.
R Kermes min.,	.35;
Tinct. digitalis, gtt.	x;
Syr. rum,	30.;
Syr. quinquinae,	20.;
Infus. aromat.,	100.

Dose, same as in the preceding formula.

Purgative or nutritive enemata may also be given at this stage, and a vesicant will be useful for several purposes.

When adynamia occurs, lotions of stimulating alcoholic

preparation should be applied externally. Internally alcoholics in either distilled or fermented form will be useful. Also a dessertspoonful may be given every half-hour of the following:

	Grammes.
R Acetat. ammon.,	2;
Infus. mel.,	100;
Syr. quinquinæ,	40.

Coffee must also be given with or without the addition of brandy. For nourishment bouillon and the preparations of beef of various kinds may be used, and in suitable cases nourishing enemata may be administered. For the passive congestions blood must be abstracted. For the active congestions digitalis, caffeine, sparteine, calomel, and brandy are required. If diarrhœa becomes troublesome, one may give albumen, phosphate of lime, or peptones to relieve the intestinal congestion. Icterus calls for calomel and the sodium bicarbonate waters. In epidemic pneumonia sulphate of quinine per rectum should be given, in small quantities, two to four times daily. If an abscess forms in the lung, it should be opened, if its site can be ascertained, and eucalyptus should be given internally in potions and externally by fumigation. Should gangrene occur, eucalyptus and the hypophosphites are indicated, with iodoform externally and internally. A. F. C.

**Zannellis: Treatment of Diphtheria with Iodoform.**  
(*Journ. de Méd.*, June 2, 1889.)

Six patients were treated with local applications, and all recovered with no symptoms of paralysis. Six others were treated with other means, and of these, two recovered and four died. These results led the author to the conclusion that iodoform was destructive to the bacillus of diphtheria, and to its toxic products. Laboratory investigations upon the same subject were also made, and these led to the conclusion that the bacillus of Klebs and Loeffler is the specific cause of diphtheria, producing the false membranes and the local lesions, while the other disorders are due to the paralyzing action of the toxic product of the bacillus upon nerve-centres. Therefore, in diphtheria two morbid elements exercise a preponderant influence, that of infection and that of intoxication. The element of inflammation plays only a secondary part. Hence, the medicaments which best respond to the therapeutic indications of the disease are disinfectants and anti-intoxicants. Disinfectants should be applied locally because the bacillus is met most frequently at the seat of the false membrane. It some-



times invades the neighboring glands, but it is rarely in the blood and internal organs. Before using disinfectants, the false membrane should be dissolved and taken away that the disinfectant may be applied directly to the diseased surface. Disinfectants and solvents of such a character should be used as to cause neither irritation nor pain. For a solvent, lime-water or lemon-juice is recommended, and for a disinfectant, iodoform, which has antiseptic, analgesic, anæsthetic, and antispasmodic properties. It is slowly absorbed, and so acts not only upon the bacillus, but upon the diphtheritic poison, of which it neutralizes the chemical composition, arrests its diastatic power, and acts against its toxic effects. It may cause intoxication, however, if absorbed in large quantities. The false membrane, having been removed by means of absorbent cotton and an applicator, the cotton being first moistened with a two-and-a-half-per-cent. solution of carbolic acid, and then with lemon-juice or lime-water, and the applications repeated until the membranes have been removed, ten to twenty centigrammes of iodoform are to be applied, and this is to be repeated several times daily, and continued several days after the membranes have disappeared. An emetic will favor the removal of the membrane, especially if it has a deep situation. Occasional irrigations should also be made with warm water containing in solution oxygen, one per cent. of carbolic acid, or two and a half per cent. of boric acid. The spasm of the throat muscles will prevent the solution from going to the lungs or stomach. It is believed that no other disinfectants have the advantages of iodoform for this purpose. The diphtheritic poison is believed by Roux and Yersin to be a form of diastase, because of its similar action in the presence of heat, light, and air. Its toxic effects are largely due to a paralyzing action upon the bulb and the anterior horns of the cord. The chemical composition of this poison should be neutralized by antidotes, its diastatic power should be arrested by antifermentescents, and its toxic effects should be met with antagonists. Iodoform, by neutralizing the chemical composition of the poison, and arresting its diastatic power, acts as an antidote and as an antifermentescient. Its excitant action upon the nerve-centres may also counteract the paralyzing action of the diphtheritic poison upon the same centres. Digitalis and strychnia may be used with similar results. In addition, alcohol, tea, coffee, quinine, and iron should be given, also a diet of milk, eggs, and beef-juice. Alcohol, with tea, may be given to the extent of thirty to sixty grammes daily, being given in small doses, frequently repeated. Hence the following conclusions:

1. Iodoform has a local disinfectant and antifermentescient action; it also acts as a general excitant.

2. It can act not only against the diphtheritic bacillus and its toxic product, but also against the paralyzing effects of the poison.

3. Its local analgesic and anæsthetic properties make it preferable to other disinfectants, the painful, irritating, or caustic effects of which may take away the patient's strength, and favor the extension of the disease. A. F. C.

Besmer: Treatment of the Eczema of Dentition. (*Journ. de Méd. de Paris*, July 28, 1889.)

The author's opinion is that this form of eczema is a reflex eczema of the face, or of the back of the hand, being manifested by sensitiveness of the gums and salivation. There are three indications: First, to calm the pruritus of the gums; second, to overcome the insomnia; third, to cure the local condition. For the first indication it is advised to rub the gums frequently with the finger, moistened with the following solution:

	Grammes.
R Cocaini mur.,	.05;
Potass. brom.,	.50;
Aquæ dest.,	10.;
Glycerini,	10.

For the second indication, the following mixture may be given in doses of a teaspoonful or a dessertspoonful:

	Grammes.
R Sodæ brom.,	.30 to .50;
Syr. auran. flo.,	60.

For the local condition, applications of the following ointment should be made:

	Grammes.
R Zinci oxidi,	10;
Vaselini,	30.

The affected parts should also be covered with a thin rubber or muslin mask. A. F. C.

Dochmann: The Use of Calomel in the Treatment of Phthisis. (*Rev. Mens. des Mal. de l'Enf.*, July, 1889.)

The author is in favor of this drug when the disease is in the first and second stages. Under its influence it has been observed that the appetite returned, and that there was diminution of the cough, the fever, and the night-sweats, while the diarrhoea ceased. The following formulæ are recommended:

	Grammes.
R Calomel.	.72;
Pepsin,	3.75;
Tinct. opii,	gtt. xxx;
Extr. phellandriæ,	q.s.
M. and ft. pil. nu. lx.	

	Grammes.
R Calomel,	.72;
Pepsin,	3.75;
Ergotini,	.09;
Régliſſe,	q.s.
M. and ft. pil. nu. lx.	

For hæmoptysis:

	Grammes.
R Calomel,	.72;
Pepsin,	3.75;
Extr. hyoscyamini,	.36;
" phellandriæ,	q.s.
M. and ft. pil. nu. lx.	

The first day one should take two pills every two hours, or twelve in the course of the day; the second day, ten; and the third day, eight. After the fourth day six pills daily should be taken for a month or two. If the fever should be intense, twelve or fourteen pills daily may be given while it lasts. Every five or six days the treatment should be suspended for two or three days. Pepsin is added to the pills as it increases the solubility of the calomel. Whether the calomel has a specific action upon the tubercle bacillus cannot be stated with positiveness; but it must not be forgotten that mercury is the most valuable of parasitocides in syphilis, typhoid and typhus fevers, erysipelas, cholera, dysentery, diphtheria, and pneumonia. Its antiphlogistic action, also, in the treatment of tuberculosis is of great value.

A. F. C.

Chantemesse and Vidal: Action of Different Antiseptic Substances upon Diphtheritic Bacilli. (*Rev. Mens. des Mal. de l'Enf.*, September, 1889.)

Those antiseptics which give no useful result after three minutes' use are lime-water, aqueous solution of tannin, two per cent.; carbolic acid, one per cent.; boric acid, four per cent.; sulphate of copper and sulphate of zinc, one-half per cent.; naphthol water, salol water, alcoholic solution of salicylic acid, five per cent.; aqueous solution of perchloride of iron, one per cent.; biniodide of mercury one to two thousand; with or without the addition of citric or tartaric acid. All the foregoing should be discarded with reference to any useful effect upon the bacilli of diphtheria.

Of the efficacious preparations, the solution of Soulez is first



considered. This is composed of five grammes of pure carbolic acid, with twenty grammes of camphor, and thirty of olive oil. This mixture will retard the growth of culture fluids, but it does not prevent it even after three minutes' contact. The addition to it of tartaric acid does not increase its antiseptic power. Its inefficiency is probably due to the oil which it contains, fats and oils effecting sterilization difficultly, because they do not moisten the cells. More efficient than the foregoing is camphorated naphthol, which has been used in diphtheria by Le Gendre and Chauffard with good results. A more effective mixture than any of the foregoing is composed of twenty-five grammes glycerin, five grammes of pure carbolic acid, and twenty grammes of camphor. The mixture is agitated, and placed for ten minutes in a bath of boiling water. It is then allowed to cool, when it divides into two layers, a lower liquid one and an upper viscous white one, formed by a glycerole of carbolic acid and camphor. Silk threads, upon which are the bacilli of diphtheria, may be plunged in this for twenty seconds, then washed in alcohol at 95° C., and placed in a tube containing culture fluid. The tubes will remain sterile, and it is well known that alcohol at 95° C. will not destroy the bacillus of diphtheria. This mixture is slightly caustic, and slightly adhesive. It could be readily applied to the throat once or twice daily, the application being preceded by an irrigation with carbolized or naphtholized water, and the false membrane being swabbed away with absorbent cotton. Care and cleanliness in all other respects are of course indispensable.

A. F. C.

**Mugdan:** *The Treatment of Whooping-Cough.* (Rev. *Mens. des Mal. de l'Enf.*, July, 1889.)

The paper contains the results of treatment with resorcin, antipyrin, cocaine, and the insufflation of various powders into the nose.

Resorcin was first advocated by Moncorvo for whooping-cough. He started with the idea that whooping-cough is essentially an infectious catarrh, provoked by micro-organisms, which are located in the laryngeal mucous membrane, under the vocal chords, and then began to use applications to the larynx of a one- or two-per-cent. solution of resorcin, which he gradually increased to eight per cent. In Baginsky's clinic resorcin has been used internally, but without any appreciable result; eight patients were treated with it without benefit. Affanasiëff's investigations tend to show that the habitat of the bacillus is not limited to the laryngeal mucous membrane around the vocal chords, but that it may be found in the

mucous membrane of the entire respiratory tract. This being the case, it is possible that good results might follow inhalations of fifteen- or twenty-per-cent. solutions of resorcin. Applications of cocaine were first recommended by Prior, who anæsthetized the larynx and pharynx with five- to ten-per-cent. solutions of cocaine, and so was enabled to make careful laryngoscopic examinations. Many other authorities have used the same method of treatment with good results. The method is not altogether reliable, however, on account of frequent phenomena of intoxication which attend its use.

Michael considered whooping-cough as a reflex neurosis of the nose, caused by the irritation of a specific virus, and proposed insufflation into the nasal fossæ of boric acid and quinine, or of benzoic acid. His results have been very satisfactory. Guerder also advised the insufflation of a mixture of boric acid and pulverized coffee, in equal parts, and his results were also good. This method of treatment has been tried by different authors and found efficient, Genser alone complaining that it had no effect on the progress of the disease. This method was tried in twenty-five cases in Baginsky's clinic, benzoic acid alone being used, and seventeen were much benefited after the first insufflations. A cure resulted usually in from one to three weeks.

Recently, antipyrin has been much used in the treatment of whooping-cough, and most of those who have tried it have had good results. In Baginsky's clinic it failed entirely to accomplish what was hoped from it. It is not a harmless remedy, and frequent reports have been made of its intoxicating properties.

A. F. C.

Besnier: Treatment of Infantile Facial Eczema. (*An. de Obst. Gin. y Ped.*, February, 1889.)

Eczema of the head presents three forms during infancy. The first occurs in lymphatic and scrofulo-tuberculous subjects, its principal characteristics being moderate pruritus, infarctions of the lymphatic ganglia of the nose and mouth, which may result in tuberculous lesions with abundant secretions. Often there is also phlyctenular keratitis. The second form occurs during dentition. In this form the itching is intense, the head being covered with the eruption. The gums may also be sensitive and salivation be decided. To soothe the irritation of the gums frequent applications of the following mixture are recommended:

	Grammes.
R Glycerinæ,	
Aq. destil., 5ā	8.;
Potass. brom.,	.70;
Cocain. mur.,	.70.

If the sleep is disturbed, give four teaspoonfuls, with intervals of an hour each, of the following:

		Grammes.
R	Potass. brom.,	.70;
	Mucil. acaciæ,	40.

Topically the following may be used:

		Grammes.
R	Zinci oxidi albi,	24;
	Vaselinæ,	68.

In the third variety there is no itching. The trouble is principally in the skin of the scalp, and is characterized by abundant desquamation of the skin. It may extend to the body and limbs. The hair should be cut off, and the skin of the scalp washed with soap and water, to which a little milk may be added. Then an application may be made of the following:

		Grammes.
R	Resorcin,	.70;
	Zinci ox.,	6.;
	Vaselinæ,	90.

Instead of the resorcin three or four grammes of sulphur, or twelve to twenty-four grammes of ichthyol may be used.

In the scrofulo-tuberculous form the affected portions should be bathed twice daily with a mild solution of Van Swieten's liquor, after which an ointment should be applied containing one part of calomel and thirty of a suitable excipient.

A. F. C.

**Faucher:** Irrigation of the Stomach in New-Born Infants. (*Journ. de Méd.*, February 24, 1889.)

Irrigation of the stomach in the new-born is performed in almost the same manner as in adults; the instruments being a tube and a sufficiently large receptacle. The tube is of the size of a No. 10 (Fr.) sound. The child should be held with its head thrown forward so as to allow the ready escape of matter which may flow back into the pharynx. The arms are to be secured under a napkin, which is tied around the neck. Epstein's plan of holding the child in the dorsal position is not to be approved. The end of the tube being placed in the mouth, efforts at suction will be made, and this will facilitate its downward passage, as the finger urges it forward. After the end of the tube has reached the stomach, the irrigation is performed as with adults. The operation is indicated for infants who vomit mucus and milk from the time that anything



in the way of milk is given them. The stomach may have become disordered by overfeeding, the mother nursing the child as often as it becomes restless. If the vomiting is very troublesome, it may be necessary to irrigate two or three times daily for as many days. Not only will the digestive power of the stomach improve at once under this treatment, but the bowels will also show decided change in the improved character of the stools.

A. F. C.

## II.—MEDICINE.

Guinon: *The Secondary Infections in Scarlatina.* (*Rev. Mens. des Mal. de l'Enf.*, September, 1889.)

The idea of a possible secondary infection has become too prevalent to allow it to pass without consideration. Chanin says that it results from the penetration into the organism of a second microbe, which is added to and is distinct from the first. Before the idea of microbic infection was applied to the eruptive fevers the question had been raised whether the abnormal phenomena, appearing in the course of these diseases, was of the same nature as the primary disease, and whether they resulted from external or internal conditions; whether, in a word, they constituted a function of the primary disease or were the manifestations of another disease engrafted upon the first. The discussion of this subject has, of course, a practical as well as a theoretical side. Bouchard, after studying the local manifestations in general diseases of the character under discussion, has demonstrated that the accidents and complications in these diseases are almost always new diseases, which are distinct from the original ones. The number and gravity of the complications occurring with scarlatina render it most suitable for the application of this theory. As a matter of fact, we do not as yet know the characters of the microbe of scarlatina, but we do know those of the micro-organisms which produce secondary infections in that disease. Klein, Crookshank, and others have discovered micro-organisms which were supposed to be peculiar to scarlet fever, but their results are not entirely harmonious, and have not been entirely convincing. Lenhartz, Marie Raskin, and Babés, on the other hand, have studied the blood, the viscera, and the organs especially involved in the complications of scarlatina. In suppurative adenitis, Raskin found in seven cases, with or without diphtheria, a streptococcus which was constantly present. With tonsillar and pharyngeal ulcerations, Lenhartz found a thick layer of chains of streptococci, without the

presence of gangrene,—that is, the streptococcus was evidently a secondary manifestation. In septicæmia, occurring as a complication, absolute conclusions were not drawn. Raskin found a streptococcus and a small and oval micrococcus, but did not determine their nature nor their virulence. In the blood the streptococcus was rarely found. Raskin found it in only six cases out of twenty-three. Both Raskin and Babés found the streptococcus, with other microbes, in connection with complicating pleurisy, pneumonia, pericarditis, and endocarditis. It was believed that the bacteriology of the pericardium was identical with that of the pleura. In scarlatinal pyæmia, investigators are agreed that the streptococcus is the most frequent cause, but other microbes are found at the same time in the same organ, or in other viscera. In nephritis, an important point to be decided is, whether the microbe acts upon the kidney by itself or by the products which it secretes, and recent investigations tend to show that the former supposition is the correct one. Raskin has found and isolated in the kidney the streptococcus alone or united with a micrococcus, a diplococcus, or a bacillus, and they were also found in other organs. Babés studied fourteen cases, in which there were albuminuria and œdema, and in thirteen the streptococcus, alone or associated with the pneumococcus of Talamon-Fraenkel, was found. In scarlatinal rheumatism, three forms or varieties must be distinguished, a serous non-suppurative form, a serous suppurative form, and a form in which supuration occurs at the outset. In the non-suppurative fluid of the synovial membrane Raskin found the streptococcus; in purulent arthritis the streptococcus may be found in great numbers.

In the pus of otitis Raskin constantly found the streptococcus, and in the later stages of the disease it was associated with the staphylococcus aureus et staphylococcus albus. In diphtheria Raskin found streptococci, diplococci, micrococci, and Loeffler, in addition to the streptococci, found also the Klebs-Loeffler bacilli. From the foregoing, it would appear that most of the complications in scarlatina are due, in all probability, to the action of a streptococcus, either isolated or associated with other microbes, and it has always presented the same character, with the exception that it varies in virulence. It is probably identical with the *streptococcus pyogenes* of Rosenbach, and Lenhartz thinks that it is modified in scarlatina by the primary infection. It is probably this organism which causes death in scarlatina, either directly by septicæmia or indirectly by nephritis. Secondary infection in this disease most frequently occurs by way of the pharynx, and the penetration of the

microbes is favored by the loss of epithelium, by the dilatation of the lymphatic channels, and by the recumbent position which the sick child assumes. The foregoing indicates antiseptics of the throat in all the pyrexias of childhood, but especially in scarlet fever, and before any complications occur, but caustic or irritant applications must always be avoided because of their destructive action upon epithelium. A. F. C.

Roux and Yersin: *New Studies on Diphtheria*. (*Rev. Mens. des Mal. de l' Enf.*, September, 1889).

These authors have just added a new chapter to the excellent experimental work which they have contributed to the subject of diphtheria, and in which they demonstrated that the bacillus of Klebs and Loeffler was the specific bacillus of diphtheria. Their most recent occupation has been the study of the poison secreted by this bacillus, and their propositions are the following :

1. Cultures of the bacillus of diphtheria in weakly alkaline veal broth become acid after a few days, and subsequently resume the alkaline reaction.

2. While the culture remains acid, its toxic properties are not considerable, but when it becomes alkaline again, its toxicity is greatly increased. Deprived of its microbes by filtration, it will produce, in dogs and sheep, paralyzes which are analogous to diphtheritic paralyzes in man. Rats and mice will tolerate a dose of the poison which would be fatal to a dog of average size.

3. As was announced in a previous paper, this diphtheritic poison resembles diastase in several of its properties.

When subjected to the action of heat, the higher the temperature and the longer it is continued the more distinctive its influence upon the poison. Thus, when the culture liquid is filtered and heated under certain conditions, it will not cause death promptly, and still it is not harmless, for animals, to whom it is given in sufficient quantity, slowly emaciate though continuing to eat, and finally die after having shown symptoms of paralysis for several days; therefore heating seems to have destroyed a portion of the poison. Quite contrary to the diastases, some of which act better in an alkaline, and others in an acid medium, the addition of carbolic or boric acid or baborate of soda diminishes the toxic activity of the culture fluid. A very small quantity of acid will suffice to produce this result, and it is possible that important therapeutic deductions may be drawn therefrom.

4. The diphtheritic poison, so potent when it is introduced under the skin, may be taken by the mouth in large quantities



by guinea-pigs and pigeons without much apparent inconvenience to them. As many as ten cubic centimetres of the filtered liquid have been taken by a pigeon without any apparent disturbance, while two-fifths of a centimetre of the same liquid, injected under the skin of a second pigeon, caused death in sixty hours. Having thus shown the numerous points of similarity between the diphtheritic poison and the diastases and venoms, Roux and Yersin remark, very judiciously, that the extreme toxicity of the poison secreted by the bacillus might lead one to regard the bacillus itself as very virulent, but that, as a matter of fact, the contrary is true. Injecting as small a quantity as one-eighth cubic centimetre of a very old culture under the skin of a guinea-pig will cause death, and one would be inclined to attribute its death to the virulence of the injected bacilli; but the bacilli are incapable of proliferating under the skin of animals. The virulence of a microbe is its facility in developing in the body of a living animal, and this facility is usually increased by the passage of the microbe through a series of animals. The toxicity of a culture fluid does not express the virulence of its microbe. The energetic toxic power of the diphtheritic poison, which even in very small doses and after it has been kept a long time produces the most terrible results, makes it imperative that the physician should interfere at the beginning of the formation of false membranes, and before sufficient time has elapsed for the bacillus to secrete a sufficient quantity of poison to do its fatal work, for in diphtheria, contrary to that which occurs in many infectious diseases, infection is not produced by the invasion of a microbe into the tissues, but by diffusion into the entire organism of a poison secreted upon a mucous membrane which may be only slightly eroded.

A. F. C.

Hagenbach-Burckhardt and Duvoisin: Infantile Hysteria. (*Rev. Mens. des Mal. de l'Enf.*, September, 1889.)

According to Liebermeister, hysteria is the result of a functional disease of the gray matter of the brain. Hence it should be considered as a psychical disease, and not as a simple neurosis complicating psychical disorders. The view of Liebermeister is shared by the authors. They regard hysteria as essentially a psychical disease, because psychic symptoms are constantly manifest; because, in many cases, they are the first or perhaps the only symptoms which appear; because it is generally admitted that hypochondria, the analogue in the male of hysteria, is a psychosis; and because one frequently sees, as hysteria develops, phenomena which leave no uncertainty as to the psychic character of the disease. While in

adults hysteria commonly shows a great complexity of symptoms, the hysterical phenomena in children are usually simple and clear. The authors have treated, in the hospital at Basle, since 1874, hysterical children to the number of three boys and twenty-one girls, which may be divided into three groups. In the first group were the most simple forms of the disease, the morbid phenomena being merely certain modifications of character, and certain symptoms which differed little from the general disorders produced by anæmia. The second group included cases which were without violent attacks and without troubles of consciousness. In this class there was a tendency to localization of the disease, and the determination of such disorders as paresis, paralysis, contractures, localized anæsthesia or hyperæsthesia, præcordial anxiety, aphonia, etc. In the third group were the cases which had convulsions with more or less loss of consciousness,—the *grand hysteria* of Charcot. The following might be considered as its varieties: 1, attacks of hysterio-epilepsy or epileptiform hysteria; 2, chorea major or rhythmic chorea; 3, spasmus nutans; 4, tonic and clonic convulsions, usually atypical, occurring in paroxysms.

With regard to etiology: It seems probable that predisposition has most to do with the origin of the disease, and this predisposition may be hereditary, whether congenital or acquired. The hereditary predisposition was observed in fifty-eight per cent. of the author's cases. In fifty per cent. of the cases there was hereditary tuberculosis. The most important predisposing conditions of an acquired character are anæmia and disorders of nutrition; all but two of the cases in the given series being anæmic. In several of the cases whooping-cough had exercised an unfavorable influence upon the constitution; in two there had been acute anterior poliomyelitis in early childhood. In eight cases fear and different local and general affections had exercised a decided influence. Of eight cases in which the first symptoms of hysteria were seen prior to the tenth year, there was hereditary predisposition in six. Of sixteen who did not become hysterical until after the tenth year, half of them had scarcely any hereditary antecedents.

If hysterical children are early submitted to methodical treatment, improvement is usually observed within a short time; but the subsequent history may be unfavorable. Of twenty-two cases, fourteen suffered relapse within four years after their discharge from the hospital; and the others remained very anæmic. Of eleven who were more than seventeen years of age and who had been more than five years out of hospital, only one remained in good health. The others

had attacks of migraine, palpitations, nervousness, psychical and corporeal weakness, hysterical psychoses, etc. In making a diagnosis of hysteria, epileptiform attacks and phenomena of simulation may cause much embarrassment. As to prognosis, Jolly and Briquet consider the disease a very rebellious one, while Henoch and Weiss look upon it as devoid of gravity. It is sufficiently proven that it is subject to relapses and to psychical weaknesses. The treatment should aim, first, to combat the isolated symptoms of the disease; second, to act upon the general condition, and especially to relieve the anæmia.

A. F. C.

**Le Gendre : Diphtheria in the Light of the most Recent Investigations.** (*Le Concours*, April 27, 1889.)

The recent investigations of Roux and Yersin have revived the controversy as to the nature and best method of treatment of this disease. Simon reiterates the opinion, which he long since expressed, that the local treatment, with rapid and frequent removal of the false membranes, was the correct and rational one, and this opinion is shared by the author, who has long considered the false membrane as the point of departure of the infectious element.

The pathogenic mechanism of diphtheria is as follows: Diphtheritic germs are carried by a great variety of means to the buccal, pharyngeal, or laryngo-bronchial mucous membrane, which has been deprived at certain points of its epithelium, in the course of an acute catarrhal inflammation, which may have been very slight in character. Grancher believes that the infecting element is communicated more frequently by persons and objects than through the medium of the air. The habit which is so common with children of touching all sorts of objects, and of frequently carrying the fingers to the mouth, must explain the infection in very many cases. Loeffler has found the bacillus of diphtheria in the mouth of a child who was not ill, and this suggests that the bacillus is not offensive under all circumstances. This being so, it only awaits an inflammation of the mucous membrane or a loss of the protecting epithelium to manifest its virulence and elaborate its poison, which penetrates the organism. Inoculation is generally effected upon the tonsils and isthmus of the pharynx, because with each act of swallowing the saliva is brought in contact with these organs, the microbes being carried with it and the false membrane developing in a short time. The membrane may be the result of a fibrinous degeneration of epithelial cells infiltrated with an albuminoid substance, or it may be due to the production of a cellulo-fibrin-



ous exudate rapidly causing coagulation, necrosis, and thus forming the white, opaque, dense membrane intimately adherent to the mucosa. The blood and the organs rarely contain the diphtheritic microbes, but the soluble chemical poison which they secrete, absorbed at the point of production, produces the toxic symptoms which are so well known. Hence, the object of treatment should be the destruction of the microbes wherever false membrane indicates their presence. This is to be attained not only by the inhalation of vapors, whether of turpentine, tar, or carbolic acid, but by local manual interference, according to the method of Grancher. Applications of the mercurial salts are frequently made, but they are too irritating, and by their diffusion destroy tissue which is not diseased. A better mixture is phenol, combined with camphor or oil. With such a mixture upon a stiff brush (*écuvillon*) one may attack false membrane rather vigorously. Grancher's formula for the mixture for local application is:

	Grammes.
R Acidi tartarici,	1;
Acidi carbolici,	5;
Alcohol,	10;
Camphoræ,	15;
Ol. amygdal. dulc.,	20;

To be applied locally morning and evening.

A. F. C.

**De Ranse: Conditions for the Propagation of Diphtheria: Prophylactic Measures: Isolation and Antisepsis.** (*Journ. de Méd.*, March 2, 1889.)

Diphtheria has been on the increase for several years, and, after tuberculosis, is the disease which is most destructive to human life. In children's hospitals it has a mortality of sixty to eighty per cent. It has become a social peril, and demands the special attention of micro-biologists, clinicians, hygienists, and all others who are interested concerning the public health. One of the most important problems to study and to decide is its pathogenesis and the mode of its propagation. It is generally admitted that it proceeds from an infectious germ, as shown with positiveness by Roux and Yersin, who have confirmed the discoveries of Loeffler and many others. It is desirable to know in what way this infectious germ passes from one organism to another and propagates the disease, and whether the vehicle is air, water, solid clothes, the dung-hills of the poultry-yards, etc. The study of these points can be carried on far better in the country than in the city.

Such a study was made at Oullins, near Lyons during the last few months of 1888, by Professor Bard, of Lyons. There

were under observation twenty-nine cases, between the 18th of September and the end of November. The first case could not be traced to anything in the local surroundings of the village, and the conclusion was forced upon the investigator that it was to direct or mediate contagion which was imported into the place. Such a conclusion coincides with the known resisting power of the diphtheritic germ, and the possibility of its prolonged preservation and transportation. Roux and Yersin have shown that the bacillus of Loeffler preserved its virulence after five or six months of culture, and clinical facts have shown that its virulence continued as long as four years. In twenty-six of the twenty-nine cases which were studied, the author was enabled to ascertain the subject who had been the bearer of the contagion, and in most cases could trace the day upon which the contagion was borne. In twenty-five cases there was direct contact between the bearer and the sufferer of contagion; in one the contagion was mediate. Of the twenty-five direct communications, ten were from brother to brother, three were among neighbors, and twelve at school. The remission of the epidemic followed the closing of the school. In only two of the twenty-eight secondary cases was the dangerous contact suspected, but not demonstrated. The first case developed six secondary ones; five of the latter were sterile, but the sixth developed another case, and the latter still another. The productive power of other cases has been carefully traced out, and the general conclusion may be drawn that in the development of epidemics of diphtheria the disease is usually propagated from the persons of the sick to those of the well; usually by direct contagion.

In regard to prophylactic measures, Grancher has adopted the following regulations in his hospital service:

Any one who visits his service must first remove all his clothes and, at the entrance of the ward, put on hospital garments. During the visit the hands must be frequently washed, vessels for the purpose being distributed about the wards containing a solution of sublimate and tartaric acid.

The number of assistants in the wards has been increased. A special assistant is deputed to attend patients with contagious diseases and must have nothing to do with the others. A patient with a contagious disease is isolated from the others by means of a box or fence surrounding the bed. His food is brought in vessels used for no other patient, and these are placed in boiling water immediately after being used. Similar precautions are to be observed with everything else in use about the patient, all clothes being thoroughly disinfected after use. The walls of the ward are to be painted with

linseed oil and litharge, and washed daily. It is hoped that these rigorous measures of antiseptics will bring satisfactory results.

A. F. C.

**Le Gendre: Recent Contributions to the Subject of Variola.** (*Le Concours*, March 16, 1889.)

The period of incubation of this disease has not yet been definitely determined. Barthélemy, who made extensive investigations concerning variola, in 1880, placed it between nine and fifteen days. Other writers have placed it at seven or more days. Jobard studied the influence of variola upon pregnancy, and upon the vitality of the foetus in 1888. Abortion seldom occurs with varioloid, but with the discrete or coherent form of variola it occurs in one-half the cases, in the confluent form it is almost inevitable, occurring generally during the period of suppuration. The causes of abortion in pregnant women with variola are—the death of the foetus, itself infected, uterine or placental hemorrhage, or uterine contractions due to hyperthermia, or the influence of drugs. The foetus does not necessarily become infected by the mother. Should infection occur, it usually takes place late in the history of the mother's disease. Lothar-Mayer states that a foetus is less susceptible to variola than a new-born or very young infant. The possibility of intrauterine variola has been abundantly demonstrated. Not a few cases have been reported in which infants have been born covered with variolous pustules, with eruption upon the mucous membrane of the larynx, trachea, and bronchi, with inflammatory congestion of the lungs and with broncho-pneumonia. Albuminuria is very common in the severer forms of the disease, especially during the acute stage. But it is not so intense nor so significant as that which occurs during convalescence. In the latter there may be the ordinary symptoms of acute nephritis. Nervous phenomena may be present during the period of invasion indicating congestion of nerve-centres; they may accompany the fever of suppuration, or there may be lesions of the brain or cord persisting after the disease has disappeared and resulting from the passage of microbes into the system. Some of these nerve-lesions may be irremediable, as in the destruction of the retina in the hemorrhagic form. Du Castel, in 1881, introduced the method of treatment in which ether was administered hypodermically, and the extract of thebain given by the mouth. Good results from this method have been reported by several observers. Cold baths have been of service in some cases, local applications of carbolic acid have modified the eruption in others. Other antiseptics have been used in other cases with varying



results. The pathogenic elements in this disease are still imperfectly known. Absorption of the virus probably takes place principally by the air-passages.

A. F. C.

Simon: The Nature of Diphtheria. (*Rev. Mens. des Mal. de l'Enf.*, February, 1889.)

Since the time of Bretonneau there has been no doubt but that diphtheria is a specific contagious infectious disease, characterized by certain false membranes, which are recognizable by certain physical signs. The isthmus of the pharynx is generally the initial seat of these membranes, and they tend to invade the air-passages and cause asphyxia. The ganglionic complications, which almost always accompany the disease, are either the result of simple inflammatory extension, or constitute the first degree of an intoxication which sometimes constitutes the entire disease, prostrating the patient, even though there may not be such material obstacles as to cause asphyxia. The question arises whether, with the different processes of diphtheria, there is a particular aptitude for the disease in certain individuals, and whether each individual has his particular form of disease. Is there in the false membrane a specific character which has escaped all the physical characteristics which have heretofore been given to it? As to the etiology of the disease there can no longer be any doubt. The false membranes contain a bacillus which can be reproduced by culture and can transmit the disease to animals. Before and since 1868, Letzerich, Oertel, Nassiloff, Classen, Eberth, Hueter, Tommasi, Wood, Formad, and Cornil have found micrococci in the false membranes, the blood, and the viscera of diphtheritic patients; but Senator and Schweninger have demonstrated that analogous spores exist normally in the upper part of the digestive tube. Talamon has been able to reproduce false membrane in animals inoculated with a culture-fluid of the microbe of diphtheria, but the results were inconsistent. Klebs described a bacterium peculiar to the false membrane of diphtheria in 1883. Loeffler reproduced diphtheritic membrane in pigeons, chickens, rabbits, and guinea-pigs by inoculating with pure cultures of the bacillus of Klebs. Paralysis did not occur in the animals which were thus experimented with. Roux and Yersin have found the Klebs bacillus, in all cases studied by them, to have reproduced false membranes in animals, and have also reproduced the diphtheritic paralyses. They have shown that the liquid filtered from pure cultures of the bacteria, and deprived of its microbes, still contains a poison which will kill animals which are experimented with or will give them paralysis.

The experiments of these investigators have seemed to determine the fact that diphtheria in human beings is identical with that which occurs in animals.

As to the varieties of diphtheria,—to go back to the time of Trousseau, that author considered, first, local diphtheria; second, infectious diphtheria; third, toxic and hypertoxic diphtheria. The first variety has false membranes, but they do not show much tendency to extend, and are without toxic power. The second variety is also known as the grave form of angina.

The investigations, which have been made since Trousseau's time, show that no case of diphtheria is without toxicity, and that whenever the bacillus of Klebs and false membranes can be demonstrated a grave prognosis may be among the possibilities. The infectious character of the membrane indicates its removal as speedily and completely as possible. The toxic and hypertoxic forms of the disease are, in some cases, only aggravated forms of diphtheria in which the course is a very rapid one, and in human beings there is usually a greater development of false membrane than in animals, with great œdema of the adjacent parts. Diphtheria may, therefore, be said to be a disease characterized by false membranes which contain the bacillus of Klebs, and all the symptoms of diphtheria have the bacillus for a point of departure. Roux and Yersin have shown that the cultures of the bacillus of Klebs, when kept in hermetically-sealed tubes, keep their pathogenic properties more than five months. Contact with light and air diminishes their virulence. An old and weak solution may be revived, and have a new intensity, if brought under the influence of new cultures. Roux and Yersin have expressed the hope that it may be possible to accustom animals to the poison of diphtheria and so to produce in them immunity to it.

A. F. C.

Heubner: *Scarlatinal Diphtheria and its Treatment.* (*Rev. Mens. des Mal. de l'Enf.*, February, 1889.)

In the author's opinion scarlatinal diphtheria is produced by the contagium of scarlatina. This brings scarlatinal angina under the same head as the fever, the eruption, and the nephritis of the disease. Let the poison exercise a particularly intense effect upon the naso-pharyngeal region, and simple angina will be transformed, by reason of the considerable changes in the tissues, into a diphtheritic inflammation, which will finally cause necrosis of the tissues. The scarlatinal contagium is also the direct agent of the destruction of the lymphatic organs, though there is extensive necrosis of the glands

only in particularly grave cases. As soon as the scarlatinal poison has destroyed the tissues, and the tissues of the tonsils are usually the first to be invaded, there is intense proliferation of the specific micro-organisms, which rapidly penetrate into the lymphatic current and invade the nearest glands. Hence scarlatinal diphtheria will be the fatal consequence of severe scarlatinal infection as long as the means for destroying the scarlatinal poison in the body remain undiscovered. The author's treatment consists of methodical injections of a three- or five-per-cent. solution of carbolic acid into the tissue of the tonsils and the velum of the palate. These injections not only cause the penetration of an antiseptic liquid into the interstitial spaces, but even into the lymphatic circulation and the corresponding lymphatic glands. They should be continued as long as there is fever and decided swelling of the lymphatic glands.

A. F. C.

Peiper: The Relations of Chorea to Articular Rheumatism and Endocarditis. (*Rev. Mens. des Mal. de l'Enf.*, March, 1889.)

This paper analyzes thirty cases of chorea. In seven there was an immediate relation with acute articular rheumatism, the chorea supervening soon after the rheumatic symptoms were noticeable. In one case the chorea coincided with polyarthritis and endocarditis. In six the chorea was complicated with valvular lesions, only one of the six having shown previous indications of articular rheumatism. In the other sixteen cases there was no determinable history of accompanying rheumatism or heart-disease. From this it would appear that the coincidence of chorea with rheumatism is not so frequent as has been supposed, though it cannot be said that the rheumatic diathesis has no influence in the causation of chorea. Into the question of the etiology of these diseases must enter such considerations as local, climatic, atmospheric, and other influences.

A. F. C.

Espine: Two Forms of Paralysis in Children. (*Rev. Mens. des Mal. de l'Enf.*, April, 1889.)

The first form is infantile spasmodic hemiplegia, which was described by Heine in 1860, by Charcot and his pupils, by Picot, and Espine, and by Strümpell, the latter giving it the name acute polyencephalitis. D'Espine and Gaudard have shown, by the study of many cases, that the disease is the result of different primary diseases, which have their seat in the motor zone or along the course of the *fasciculus pyramidalis*. It sometimes appears suddenly, with or without loss



of consciousness, most frequently after an encephalopathy, characterized by general or partial epileptiform convulsions, and accompanied by moderate fever. The hemiplegia usually persists, either in the ordinary form, which is the less severe, without arrest of development of the bones, without slight muscular atrophy, with normal electric contractility, but also with contractures, and faulty attitudes of the limbs. In the atrophic form there is diminution in the size of the affected limbs, especially the upper one; there is also flattening of the skull on the atrophied side, bony hemiatrophy of the facial and frontal regions, anomalous movements, such as hemiathe-tosis and hemichorea. The intellect may suffer much or little, and there may be aphasia from the beginning. Epilepsy is frequently developed in the course of the disease, and is especially likely to appear at puberty. In most of the autopsies which have been made there has been found evidence either of former hemorrhage or softening, proencephalus, lobar atrophic sclerosis, sclerosis with hypertrophy of the brain, or meningo-encephalitis. Congenital hemiplegia is rare, but is occasionally caused by compression or traumatism during labor.

The second form of paralysis is spasmodic infantile tabes, which was described by Erb, as it is seen in adults, under the name of spastic spinal paralysis. According to both Erb and Charcot, the disease is due to systematic sclerosis of the lateral columns. The disease, in children, is distinguished from that in adults, first by being a congenital disease, not hereditary, and due to lesions which are produced during labor, or after premature birth, and which prevent the normal development of the pyramidal fasciculi. It was described by Little under the name of congenital spasmodic rigidity of the limbs, and he and others distinguished a spinal and a cerebro-spinal form. No autopsies have been made upon the spinal form. Upon the cerebro-spinal form autopsies have shown that the primary lesion is most frequently situated at the level of the fissure of Rolando, in the cerebral cortex, and that it entails a double degeneration of the pyramidal fasciculus. According to Osler the lesion is a cortical sclerosis. The etiology rests upon premature birth, difficult parturition, and inherited nervous excitability for the spinal form, and upon obstetrical traumatism for the cerebro-spinal form. The principal symptoms in the spinal form are rigidity of the lower limbs, which is seen at times immediately after birth, at others during the first year of life. The hips or knees may be unequally flexed, and the feet may show talipes equinus or talipes varus. In such cases the trunk will be thrown backward to sustain the equilibrium. At the age of five or six years a few steps can

be taken, especially if canes are used. The contractures may extend to the upper limbs, the tendon reflexes may be exaggerated, but sensibility and electrical contractility may be preserved. The sphincters may be normal, there may be no defect in the intelligence or the cranial nerves, and no muscular atrophy. The general health may also be good.

In the cerebro-spinal form there are frequently convulsions at the beginning, and the upper and lower limbs are almost always the seat of contractures. Children with this disease are usually backward, imbecile, or idiotic, and have strabismus, salivation, and pharyngeal spasms. The diagnosis is to be differentiated from disseminated sclerosis *en plaques*, which is rare in childhood, from hereditary ataxia of Friedreich, and from the amyotrophic lateral sclerosis of Charcot. Spasmodic tabes is almost incurable. In some cases great improvement follows tenotomy or orthopedic manipulations, or active and passive gymnastics, or weak currents of galvanism, or the treatment by heat.

A. F. C.

**Kohn:** Two Cases of Reflex Epilepsy, Successfully treated. (*Rev. Mens. des Mal. de l'Enf.*, January, 1889.)

One frequently sees in children of very nervous temperament intense convulsions, which often seem to depend upon exciting causes, which are quite insignificant. The two cases of reflex epilepsy reported by the author are of interest on account of the etiological circumstances which caused the appearance of the accidents. The first was that of a boy ten months of age, who had an epileptic attack almost daily for six days. Some days before the beginning of the spasms a lobster's eye had been introduced into the child's eye for the purpose of removing a foreign body. It was impossible with the means which were at hand to remove it, and the consequence was that it became encysted in the lachrymal cul-de-sac, and caused a decided swelling. A small incision was made over the cyst, the foreign body was removed, and the spasms at once ceased. The second case was in a girl eight years of age, who had suffered for seven months with epileptiform attacks averaging two per week. An examination gave no clue as to the cause, but one day a small mass of moist crusts covering an ulceration of the scalp in the occipital region was discovered, by chance. This led to the discovery of a portion of carious bone, and it was ascertained that about the time that the spasms appeared the child had been pecked upon the head by an angry rooster. The carious bone was removed and there were no more spasms.

A. F. C.

Pfeiffer: Glandular Fever. (*Rev. Mens. des Mal. de l'Enf.*, June, 1889.)

The symptoms with a child from five to eight years of age are that it is suddenly attacked with fever during the night, accompanied with great weariness and great restlessness; vomiting may also be present. The temperature generally reaches  $39^{\circ}$  or  $40^{\circ}$  C. The organs seem normal, but there is great sensitiveness when motion is made by the head and during deglutition. An examination of the neck at the level of the posterior border of the sterno-mastoid muscle and at the nucha shows a number of lymphatic glands which are considerably swollen and painful. The next day the fever will be absent, and there will be only a few swollen and painful cervical glands. For some days the head will be carried in a constrained position and pain in deglutition will be complained of. These are the symptoms of glandular or ganglionic fever. In severe cases the symptoms may last as long as eight or ten days, the temperature remaining high on the second day instead of falling, the glandular swelling involving both sides of the neck and finally the nucha, the bucco-pharyngeal mucous membrane being very red, deglutition painful, and an irritating cough occurring. On the third or fourth day the liver and spleen become enlarged, and there is severe pain between the umbilicus and the symphysis pubis. There is no abnormality in the lungs or digestive organs, and no cutaneous eruption. Only the cervical glands and those of the nucha are enlarged, but the cough and abdominal pain show that the retro-pharyngeal, retro-tracheal, and mesenteric glands may also have become involved. The author considers this an infectious and epidemic disease, but the epidemic character does not extend beyond a single house or a single family. This disease might be confused with abortive typhoid, scarlatina, measles, or small-pox, or with diphtheria which is unaccompanied with false membranes.

In addition to this form of glandular fever of rapid evolution, another less acute form may also be described. Instead of the cervical glands, all the abdominal glandular organs have a painful and characteristic swelling. The only relation as yet discoverable between the two forms of disease consists in the swelling of the liver and spleen in connection with the trouble in the lymphatic glands. In glandular fever with abdominal localization children have rebellious diarrhœa in addition to the high fever. The diarrhœa is not very copious, but is quickly followed by emaciation. Palpation of the abdomen shows swelling of the mesenteric glands, and hypertrophy of the liver and spleen. Under the influence of calomel, cold



compresses, and tonic diet a cure may be obtained in a few weeks. In such cases there is a specific disease which must not be confounded with simple catarrh of the intestine, nor with thyroid fever, nor with mesenteric phthisis. A. F. C.

Dupré: Insufficiency of the Pulmonary Artery. (*Rev. Mens. des Mal. de l'Enf.*, May, 1889.)

The pathogenesis of this lesion has three principal factors:

1. Congenital dilatation of the pulmonary artery.
2. Acquired distention of its orifice.
3. Endocarditis involving the sigmoid valves.

These three processes are often associated by a simple relation.

As to the pathological anatomy, the condition is analogous to aortic insufficiency. The insufficiency may be pure or mixed; if the latter, it is associated with contraction; if the former, it is associated with dilatation of the vessel.

The symptomatology is clear, simple, and obtained by auscultation solely, and reveals a soft, moist, diastolic murmur identical in quality with the murmur of aortic insufficiency. Its maximum is at the left border of the sternum, in the second intercostal space, and it is propagated in the direction of the pulmonary artery. If the lesion is of long standing, there will be increase in the volume of the right heart; and if it is pure, there will be ectasis of the trunk of the pulmonary artery. There are few peripheral or functional signs apart from the slight præcordial pain, and tendency to dyspnoea after slight effort. The pulse is usually small. Should the condition come in the course of and in connection with ulcerative endocarditis, the attendant insufficiency may pass unperceived in the midst of the other symptoms; but if the lesion is congenital, the murmur will be the only perceptible sign. Subsequently the right heart will become dilated and enfeebled and circulatory troubles will appear. If the lesion is simple, the course and duration will be that of chronic mitral disease; if there is ulcerative endocarditis, the insufficiency may suffer neglect. The prognosis is grave, and the treatment should consist in imposing the minimum of work on the heart. The diagnosis is difficult, and may not be made until the autopsy. If made during life, it will be based on the existence of a double murmur in the pulmonary area. The lesion will seldom be confounded with aortic insufficiency, or pericardial friction.

A. F. C.

## III.—SURGERY.

Hutinel: Purulent Pleurisy in Children. (*Journ. de Méd.*, May 19, 1889.)

In every case of purulent pleurisy there are pyogenic germs. They may be the ordinary microbes of suppuration or microbes which do not usually result in suppuration. In two-thirds of the cases occurring in children pneumococci are present, being developed in the course of a pneumonia or soon after defervescence, or, in other cases, as a consequence of broncho-pneumonia. Purulent pleurisy with pneumococci may even be primary. In some of the cases in which it is secondary it may follow an abscess of the liver or of the kidney, or an otitis media. Purulent pleurisy may therefore be of two varieties, one of which is characterized by the presence of streptococci and the other by pneumococci, and there are distinct lesions for each variety. The latter variety is characterized by a thick, creamy, odorless pus in which many leucocytes may be found. There are also flocculi of fibrin in the pus. In addition, pleuritic adhesions develop in which the pus may become imprisoned. Such areas yield a dull percussion-note which may be absent elsewhere. In such cases a cure quickly follows the evacuation of the pus.

In purulent pleurisy, with streptococci, the pus is less flocculent and less fibrinous; there are no pleural adhesions, and no encystment of the pus. In a word, there is no proper inflammation of the pleura. Though pleurisy with pneumococci is so common, its diagnosis is not easy on account of its latent condition at first with slight elevation of temperature, and the encystment of the pus which results in only localized dulness, and does not prevent the auscultation of the respiratory murmur from behind. In some cases ægophony may be appreciated, and in others there may be aphonic pectoriloquy. Œdema of the thoracic wall may or may not be present. Ziemssen's statement, that a temperature of 39° C. or more indicates pleurisy with effusion, is not always sustained by facts. The temperature, therefore, can furnish no pathognomonic information. An element of great importance consists in the duration of the disease. A serious pleurisy is quickly recovered from, but should the disease last more than a month and be accompanied with oscillations of the temperature, one may be almost certain it is of the purulent variety.

If one is in doubt, the thorax should be aspirated; no harm resulting if the operation is performed antiseptically. If pus

has been obtained, a microscopical examination will enable one to make a positive diagnosis. If no pus is obtained, one cannot be certain of the condition, as the pus may have been encapsuled at another portion of the thorax. Should pus eventually be found, the treatment may be regulated by its character and by the gravity of the disease. Purulent pleurisy with pneumococci is relatively a benign condition, and in some cases the pus may even be absorbed. Repeated punctures of the thorax may produce a cure,—in other words, antiseptic pleurotomy should only be performed when nothing else will suffice. If the pus contains streptococci, the disease is of great gravity. In such cases the pleura should be incised as soon as possible, drainage should be thorough and in ten to fifteen days the tube will be forced out of the opening by the lung itself.

A. F. C.

Ogston : *Surgical Treatment of Rickets.* (*Rev. Mens. des Mal. de l'Enf.*, February, 1889.)

The author's observations do not apply to infantile rachitis alone, they refer also to that condition which has been described by Macewen under the name of *rachitis adolescentium*. If the disease originates in errors of digestion, it may possibly be remedied by diet, the use of phosphorus and cod-liver oil, without resorting to surgical intervention. Mild forms of rachitis in the lower limbs, occurring in persons who are in comfortable surroundings, may be corrected by means of suitable apparatus worn at night. The younger the patient the better the prospect of complete cure without a radical operation. Rachitic deformities of the lower limbs in children consist in incurvation of the femur, or *genu valgum*. Osteotomy is the proper treatment for deformities of the legs, rather than manual redressment and osteoclasia. Linear osteotomy alone will not suffice, for the long curve of the tibia will require, instead, cuneiform osteotomy. A longitudinal incision having been made, and the periosteum stripped off, the wedge is to be separated with a small saw. The anterior or larger base of the wedge should be three-quarters of an inch in length, the posterior one only half an inch. A plaster-of-Paris dressing is to be applied, and the wound should heal by first intention. Oblique section of the tibia, which has been proposed as a substitute for cuneiform osteotomy, has great difficulties and inconveniences as objections to it. Femoral curvatures are best treated by manual fracture, a plaster dressing being then applied. *Genu valgum* in young children is best treated by Delore's method of violent redressment. If the bones are too hard to yield to this treat-



ment osteotomy must be performed. The most common deformities attending rachitis during the period of youth are *genu valgum*, flat foot, and lateral deviation of the vertebral column. Flat foot is due to caries or inflammatory process of the bone. In rachitic youths it is a consequence of too much work and too heavy burdens imposed upon a defective bony structure. It is not due to defects in the tendons, and is a deformity which is peculiarly the result of rachitis. The ordinary methods of treatment, electricity, massage, gymnastics, and apparatus of various kinds, are all apt to be futile in the treatment of flat foot; besides, they are usually too expensive for those who suffer with this lesion. The author has devised an operation for its relief, which consists in making an incision on the inner side of the foot, near the medio-tarsal articulation, laying bare the bones, and denuding the head of the astragalus and the posterior portion of the scaphoid of their cartilage so as to favor ankylosis. By this operation solid bony ankylosis of the foot has been obtained. Its principal inconvenience is that it necessitates a plaster dressing for about three months. The author's results have been very good in most cases. If the deformity is very marked, the restoration of the arch of the foot will not always be complete. For rachitic deviations of the vertebral column, the author does not believe that any of the apparatuses in use are of any value. The best that one can hope for is the arrest of the disease, which may take place when surrounding circumstances are favorable.

A. F. C.

Suarez de Mendoza: Complicated Hare-Lip. (*Rev. Mens. des Mal. de l'Enf.*, December, 1889.)

Guersant believed that hare-lip operations would succeed only exceptionally whatever the age of the patient. Though such an opinion is too pessimistic; there are plenty of factors which will operate against success in this operation. Among them may be mentioned traumatism, which is necessarily extensive, hemorrhage with separation of the sides of the wound inequality in ability to unite of the two sides, and feebleness of the patient, who is of necessity not well nourished. The authors of this paper have had considerable experience with this deformity, including five cases, in which it was very aggravated. In these cases the solution of continuity involved the vault of the palate and the velum. Four of the patients were more than two years old, the age of the fifth was nineteen months. As to the indications for operation, in simple cases, in which the children are in good health, the authors advise operation at the earliest practicable moment, in other cases one

must wait. The operation which the authors have preferred is that of Mirault, of Angers, believing that there are few cases of unilateral fissure in which it is not the best which can be performed. The operations which have been recommended by various French surgeons are reviewed, and the following conclusions are reached:

1. In simple as well as in complicated cases, before freshening the surfaces of the soft parts, it is necessary to release and separate the offending bony portions until they can be brought into contact without any tension.

2. Whatever process of freshening the surfaces he preferred the use of T-forcipressure forceps will greatly facilitate this step of the operation.

3. Mirault's method of freshening, even in the severest cases, has given results that were absolutely satisfactory, this opinion differing from others which have been advanced concerning this subject.

4. Bouisson's operation gives as good results as those of Gensoul and of Blandin, and it is without some of the great inconveniences of the latter.

5. A modified Mirault operation, which may be called the method with superimposed layers, has been found of service in cases of double hare-lip.

A. F. C.

Schmidt: The Operative Treatment of Intestinal Invagination. (*Jahrb. f. Kinderh.*)

The typical phenomena of incarceration as they are seen in incarcerated hernia may serve in cases of invagination as an indication of the danger to life, and also as an indication for the necessity of operative interference.

A ten-year-old, healthy girl suddenly became sick in the evening with pain in the abdomen and vomiting, and on the afternoon of the following day had a rather firm stool. Some hours later, however, a cylindrical tumor was found to the left of and below the navel, about as long as the little finger, about three centimetres thick, immovable and sensitive to pressure. The following day the tumor was on the right side, in the region of the cæcum, and there was no stool, though enemata were given. On the fourth day there was tympanites. After rectal palpation, without finding any tumor, there was an evacuation of very offensive fecal matter which contained undigested grape and apple seeds. On the fifth day a quantity of thick fæces was discharged after the injection of a litre of water, and on the sixth day there was another evacuation in which was a quantity of dark, fluid blood.

On the seventh day there was a convulsion, bloody evacua-

tions, fecal vomiting, and unconsciousness. On the eighth day death followed the establishment of an artificial anus. The autopsy showed peritonitis, invagination of the ileum fifteen centimetres above the ileo-cæcal valve, as long as the index-finger, and perforation of the invaginated portion from gangrene. There were in this case, therefore, during the first five days abundant fecal evacuations, and when the indications of complete intestinal occlusion appeared the radical operation was no longer possible. Treves asserts that in only thirty per cent. of cases of invagination is there absolute obstruction; in eighty per cent. of the acute cases there are evacuations of blood, but vomiting is more infrequent and occurs later than in other forms of internal incarcerations, in twenty-five per cent. of the cases it does not appear until the fourth day, and in eight per cent. not at all; in twenty-five per cent. of cases the vomiting is feculent, beginning on the fourth or fifth day; meteorism is absent from many cases. Treves advises, therefore, that in cases of invagination an operation should be done on the first, or at the furthest on the second day.

A. F. C.

**Hildebrand: Operative Treatment of Hernial Tumors of the Brain and Spinal Cord.** (*Jahrb. f. Kinderh.*)

In the operative treatment of hernial tumors of the brain and spinal cord antiseptics has effected that all uncertain methods should be abandoned and that one should choose to make an incision which would open freely into the hernial sac, thereby rendering it possible to do whatever each individual case requires. The histories of three cases are published which were the subjects of operation in the surgical clinic at Göttingen. The first was a case of occipital cerebral meningocele in a child five weeks old. The tumor was as large as the head and there were no phenomena of irritation. The operation consisted in the removal of the sac, suturing, and plaster bandage, and was followed by a favorable condition until the fifth day, when there were convulsions. Death occurred on the fourteenth day from purulent meningitis. The second case was one of encephalocele in a girl fourteen days old, the tumor being as large as a hazel-nut and at the top of the nasal cavity. It interfered with the left eye and the left half of the nose. There were no symptoms of irritation. An incision was made, the contents of the tumor proving to be the anterior convolution of the brain. This wound was sutured, and aseptic dressings were applied. There was high fever, but no cerebral phenomena. Death occurred eight days after the operation. At the autopsy it was found that



the encephalocele was embedded in a soft tumor as large as an apple, which proved to be a very vascular glioma. Extirpation was not attempted in this case because the contents of the sac were not recognized as a new growth notwithstanding the free incision that was made. The third case was that of a boy eleven days old who was born with an occipital tumor as large as a child's head, which increased greatly in size during the first eleven days of life. It was diagnosed as meningocele. The skin was separated from the tumor, an incision into the latter was made, and a mass of brain matter protruded. The wound was sutured and death occurred one day after the operation. The autopsy showed that by the incision the left lateral ventricle had been opened. The tumor consisted of a large sac filled with fluid, the innermost layer of the sac being composed of brain tissue. The author was not discouraged by the results in his cases, considering that death was not due to the injury, but to the insufficient duration of antisepsis. Five cases of spina bifida were also operated upon with partial removal of the sac. Two of them were cured with complete retention of motility. The author's conclusions are that in every cerebral hernia which is not readily replaceable, the sac should be incised as a preliminary operation; then, if the contents are only fluid, the sac should be removed and the wound sutured. If the tumor is composed of brain matter and can be repositied without severe brain disturbance, it should be replaced and a compression bandage be worn for a long time. If the tumor cannot be repositied, and does not contain too much brain matter, it should be removed. Herniæ of the spinal cord should receive analogous treatment excepting that a protruding mass of the cord should never be excised.

A. F. C.

**Wechselmann: Hydrocele Neonatorum. (*Jahrb. f. Kinderh.*)**

A variety of opinions exists concerning hydrocele in the new-born. Some deny that it ever occurs, others say that it is of rare occurrence, and others that it is of very common occurrence. The author belongs to the last-mentioned category and observed it very frequently during the first few days of life at the Dresden Lying-in Hospital. Among two hundred and seventy new-born male infants, thirty-seven were found to have hydrocele, in fourteen of the cases it communicated with the peritoneal cavity. In two cases it was on the left side, in four on both sides, and in thirty-one on the right side. The size of the tumor varies from that of a cherry to that of a plum or even larger. Most of these children were under obser-

vation only until the ninth or eleventh day of life. In fifteen of the cases it was observed on the second day of life, in the others between the third and fifteenth days. Those who deny that it occurs during the first few days of life may have overlooked it in some cases, on account of the small size of the tumor, or on account of its obscuration by oedema of the scrotum. The author's explanation of hydrocele in the new-born is that in some cases it is of intrauterine origin, the vaginal process becoming closed possibly on account of trauma; in other cases the testicle is injured in the course of its descent; or there may be trauma during labor, or intrauterine inflammation of the testicle or cord. The author disagrees with the view that it may be due to disturbances of the circulation, or to increased arterial flow to the testicle.

A. F. C.

**Taudberg:** The Question of Danger in Hare-Lip Operations, and the Causes of the High Mortality which follows such Operations. (*Jahrb. f. Kinderh.*)

Hare-lip operations are more dangerous and the percentage of mortality is higher after them than after the so-called *major* operations. The factors which are concerned with success in an operation are not accurate apposition of the edges of the wound, economical use of the soft parts, and avoidance of tension, but the increased chances for the continuance of life. Experience has shown that there is no particular danger of sepsis in these operations, nor can hemorrhage be considered the cause of the great mortality, for then death would occur shortly after their performance, which is not usually the case. In the majority of cases death comes in connection with collapse, with disorders of nutrition. The cause of this may be that by removing the defect the common entrance to the respiratory and digestive tracts experiences such a change in form and function, especially in complicated hare-lips, that a detriment results to the conditions of nutrition, and a change in the manner in which respiration is accomplished. It is not probable that interference with the respiration is in all cases the only or the chief cause of death, as there are several factors operating simultaneously in the matter,—the tender age with its slight resisting power, general weakness, antecedent disturbances of nutrition, diseases of respiration, the depressing influence of a protracted operation with its accompanying pain if an anæsthetic is not used, loss of blood, choking from swallowed blood, the effect of anæsthesia if that is employed, the tension of the wound especially when the child cries, disturbed sleep, and excitement. All the functions which, like respiration, can be controlled by the will, but in other respects

are involuntary, must necessitate a certain customary way of using the organs, and if there is a sudden disturbance in the customary conditions, a certain degree of intelligence is necessary that one may accommodate himself to the new conditions. The author thinks, therefore, that complicated hare-lip should not be repaired until a child is at least a year old, and that even uncomplicated cases should not be operated upon during the first months of life.

A. F. C.

**Dollinger: Arrest of Development in the Diseased Bony Extremities in Tubercular Arthritis of the Knee.**  
(*Gaz. Méd.*, September 7, 1889.)

The author seeks to determine from a practical point of view the influence of articular inflammation in the knee on the longitudinal growth of the contiguous bones. He seeks to find out whether the shortening of the lower limb as a result of neglected osseous tuberculosis is as great as that which follows resections, this shortening being one of the principal arguments against the practice of resections during childhood. The following questions are propounded:

1. How long after the articular inflammation has been left to itself does bony shortening begin?
2. How much does this shortening amount to after a certain number of years?
3. Does the shortening process continue after the inflammation has subsided?
4. Is the growth of the diseased limb influenced by connection of the knee-trouble, and the use of the limb?

The femur is to be measured from the point of the trochanter to the lower part of the external tuberosity of the knee.

An analysis of forty-one cases resulted in the following answers to the foregoing propositions:

1. Arrest of development with shortening does not begin for a number of years after the invasion of arthritis; as long as the inflammatory irritation and hyperæmia persist the diseased limb grows at the same rate of progress as the sound one, or it may even show a greater development. Its development begins to be arrested when the irritation and the hyperæmia disappear.
2. The difference in length is not always in direct relation with the number of years which have passed since the inflammation began. The intensity of the inflammatory evolution has much to do with the nutrition of the epiphyseal cartilages or with the corresponding portion of bone.
3. In several cases in which the author had an opportunity



to measure the limbs, several years after operations had been performed, it was found that the shortening had continued to increase.

The question is raised whether such results will enable one to solve the important problem as to the indications for resection of the knee in children.

Shortening will take place after operation even though the epiphyseal cartilage has been spared, which leads one to think that the arrest of development may be due,—not to the operation, but to the tuberculous process which makes the cartilages unfit for their normal osteogenic functions. Hence, in total resections for grave osseous lesions of the knee, the removal of epiphyseal cartilages means only the removal of parts which are no longer of any use, with respect to the growth of the bones in a longitudinal direction. A. F. C.

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THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.

BY A. JACOBI, M.D.,

Late President of the New York Academy of Medicine, Clinical Professor of the  
Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from October Number.)

VI.—DISEASES OF THE DIGESTIVE ORGANS.

THE diagnoses of diseases of the *liver* are more numerous than its diseases. Primary affections are rare. *Enlargement* is frequently assumed to exist when the size is normal. In the *fœtus* and infant the liver is proportionately large, but appears still more so because of its lower part not being covered by the ribs (which in the young are more horizontally placed) as it is in the adult. Besides, the tympanitic intestines encroaching upon the liver from below and behind, and the rhachitical contraction of the chest wall, render a much larger surface of the organ accessible to percussion and palpation. Thus, actual and primary enlargement is not a common occurrence. Secondary enlargement, however, may depend on constitutional—either chronic or acute—disorders, such as alcoholism, syphilis, leucocythæmia, chronic tuberculosis, suppuration of bones or glands, malaria, or typhoid fever. The therapeutics of these

kinds of enlargement depend therefore on the character of the different causes.

Another series of enlargements is that which results from changes in the circulation. Diaphragmatic pleurisy can constrict the vena cava inferior and thereby lead to hypertrophy of the liver, ascites, and death. Pneumonia in its acute stage impedes the hepatic circulation, temporarily mostly; when it is chronic, the consecutive hyperæmia may lead up to hypertrophy; the same effect may be produced by the persistence of pleural effusions on either side. More frequent yet is the secondary hepatic enlargement of heart-disease, not so much in the congenital form in which the amount of blood is greatly reduced by the low state of general nutrition, as in acquired (mostly rheumatic) endocarditis. The number of such cases increases with every year of life; indeed children of eight or ten years, with chronic valvular diseases and consecutive enlargement of the liver, are subjects of frequent observation. Thus, indeed, the treatment of the hepatic disorders is rather that of the primary disease than of the secondary hepatic changes.

*Fatty infiltration* of the liver is, in the very young, not often complicated with much increase in size. For, indeed, to a certain extent it is normal. But, in ill nutrition, protracted diarrhœa, chronic phthisis, and after severe cases of diphtheria or scarlatina, an actual fatty degeneration is liable to occur, with enlargement of the organ. Sometimes it is found combined with interstitial inflammation (cirrhosis), particularly in cases of syphilis, rhachitis, tuberculosis, or after measles or scarlet fever. All of these facts are here alluded to in order to show that the intellectual physician can accomplish a great deal by attending to an evil before it is developed. Nothing is easier and more luckless than to prescribe iodides, calomel, or purgatives for an established local disorder, and fold the hands at the sight of an impossibility, nothing more efficient and happy than to watch *and treat* in time rhachitis and measles and scarlatina and the whole army of primary ailments. *Obsta principiis*. Noiseless prevention counts more than the loud officiousness of the recipe fiend after the evil has been permitted to advance to maturity.

Besides the cirrhotic induration of the liver, complicated



with fatty infiltration, there are rare instances of genuine cases of *cirrhosis*, mostly connected with, or depending on, alcoholism, syphilis, and tuberculosis. The atrophic form is rare and mostly due to syphilis, the hypertrophic, with more or less jaundice and but a mild degree of splenic enlargement, is more frequent. Still, the records of the journals and transactions exhibit but seventy cases altogether. Ascites is not so frequent in the young as it is in the adult; it is more often observed as the result of chronic peritonitis than of cirrhosis, and of portal obstruction of any kind. The energetic suppression of the alcoholic habit (more frequently found in children and adolescents than many presume) and the treatment of syphilis (not always hereditary) may result in recovery. Mercury and iodides are very effective, not only in syphilitic cases. In every sort of cases, and in every age, I have succeeded in relieving cirrhosis, and sometimes permanently, by alternating, by the week or fortnight, the administration of iodides (potassium or sodium) and mercury (bichloride or the green iodide, and sometimes calomel).

The therapeutics of *congestion* of the liver is that of its causes, the lungs and heart, phosphorus-poisoning, infectious fever, and very high temperatures. While nothing is more preposterous than the abuse of antipyretics in the presence of moderate temperatures, nothing is indeed more reprehensible than to allow paralysis of blood-vessels and even disintegration of tissues to take place from excessive pyrexia. The same is true of hepatic *inflammation* and *suppuration*. In our country the former, when general, is mostly traumatic, the latter the result of pyæmia, umbilical phlebitis, dysentery, perityphlitis, and pleuritis, besides an occasional case produced by pylophlebitis, or ascaris, or a contusion. Many a case of abscess need not occur if the dysenteric rectum had been disinfected by frequent enemata, a perityphlitic or pleural abscess been incised in time, and the umbilical phlebitis prevented by keeping the cord aseptic. Multiple abscesses will always terminate fatally; a single abscess may get well by either aspiration or incision and drainage. Of the two I prefer the latter, though, indeed, I have seen a successful result from a single aspiration followed by antiseptic irrigation.

The treatment of *jaundice* depends on its causes. The dangerous form met with in the septic new-born might be prevented, but cannot be cured. That which results from syphilitic stricture of the bile-ducts may recover, even after months, through a thorough mercurial treatment; complete obliteration of the bile ducts leaves no hope. The mild form depending on the sudden post-natal change in the hepatic circulation corrects itself; that which follows a gastric and duodenal catarrh in the newly-born, the infant (rarely), or the child, will get well with proper diet and medicines, which have to be adapted to both individuality and age. As a rule, the amount of food ought to be diminished, but little meat (chicken) permitted, and milk and farinaceous foods preferred. Alkaline waters (Seltzer, Vichy, Waukesha, Poland), bicarbonate or phosphate of sodium, bismuth, hydrochloric acid, resorcin, calomel will be found appropriate in a great many cases; in others, copious cool enemata or tinctura rhei aquosa. Jaundice depending on atmospheric influences has been observed to occur epidemically. Such cases require, besides the treatment outlined above, rest in bed, warm bathing, and diaphoretics. Jaundice from gall-stones, though it has been observed in the very young, even in the newly-born, is excessively rare. The rules for both dietetic and medicinal treatment of biliary calculi must be the same in all periods of life. Strictly nitrogenous food must be avoided or taken in small quantities only, and milk and fruit (oranges, grapes) and fresh vegetables permitted. Of all the medicinal agents known to me, the sulphate and the salicylate of sodium, administered for months in succession, have answered best as preventives, to guard against a repetition of the attacks.

Diseases of the *spleen* are rarely of a primary character; most cases of pseudoplasm are congenital, and not amenable to any medicinal treatment. The majority of changes occurring in the spleen are connected with, or dependent on, constitutional ailments, and result mostly in *enlargement* of the organ. Malaria, leucocythæmia and pseudo-leucocythæmia (Hodgkins's disease), and amyloid degeneration have their own indications. Rhachitis and syphilis are liable to produce induration depending on hyperplasia of the connective tissue.

Tuberculosis of the spleen is a frequent complication in the very young, with general tubercular infection. Heart-disease may lead to *embolism* and *abscesses* (the latter forming also a part of general pyæmia), typhoid fever to softening and enlargement. This condition expands the peritoneal covering and causes perisplenitis, though it be not quite distinctly accessible to diagnosis. For indeed the younger the infant, the less is percussion, being hampered by the shortness of the chest and the frequent occurrence of tympanites, able to reveal the exact size of the spleen. Unless it can be felt below the margin of the ribs it must not be assumed to be hypertrophied. There are even cases in which it can be so felt, and still there is no enlargement, for in rare instances the spleen is found floating or descended.

The therapeutics of the constitutional disorders above alluded to has been discussed in previous papers. Quinia, ergot, and arsenic have been shown to be efficient in some, and absolutely inert in others. The combination of quinia and ergot, with or without iodides, is probably among the most powerful remedies in chronic cases. Acute instances of swelling and inflammation require ice energetically applied, purgatives, and large doses of ergot; the presence of pus demands incision and drainage. To ascertain that condition exploring punctures can be made with safety. To what extent extirpation of the organ can be rendered serviceable in chronic cases remains for the future to demonstrate. Many of them that are dependent upon disorder of circulation or nutrition are more amenable to a preventive than to a curative treatment.

*Peritonitis*, either acute, subacute, or chronic, is a frequent disease at any age, and quite common in the young. The several forms will interchange and combine or alternate with each other; the chronic variety may remain dormant through an indefinite period, and suddenly break out with full force. All the forms of septic and infectious diseases give rise to it, from the sepsis of the newly-born to scarlatina, erysipelas, variola, dysentery, and typhoid fever (much more frequently without than with perforation). Trauma and perforation from any source, straining and contusion, indigestion, diarrhoea, and constipation (less frequently in the young than in the adult)



will lead up to it. Inflammatory processes in the neighborhood, such as perityphlitis and pleuritis, or simply local irritation, as from incipient hernia or retained testicle, are among the frequent causes. Perhaps the most frequent origin is that from a previous attack which occurred at a period ever so distant. After all that has been said in these brief lines, it is easy to see to what extent preventive treatment can prove effective. The watching and mitigation of infectious disease with a typical course, the speedy disinfection of the intestine in typhoid fever and dysentery, the prevention of chronic constipation or diarrhœa, the proper attendance on perityphlitis and pleuritis, the application of a truss and alleviation of the difficulties of a strangulated testicle, are just so many safeguards against attacks of peritonitis in individual cases.

When an acute attack of peritonitis, either local or general, has made its appearance, absolute rest is required by both the whole body and the affected organs. No unnecessary exertion, no motion of the body, no sitting up to evacuate either bladder or bowels, no straining is permissible, no food other than liquid,—that is, milk and such farinacea as contain least starch, viz., ground barley or oatmeal, preferably the former; for meat requires more pepsin and hydrochloric acid than a stomach at a temperature of  $104^{\circ}$  or  $106^{\circ}$  is competent to furnish, and the system has no worse enemy than half-completed or not absorbed peptones. Peristalsis must be stopped, for any disturbance of the consolidation of beginning adhesion is revenged by the tearing of newly-formed blood-vessels, the occurrence of hemorrhages, and the increase of danger. Opium must be given by the mouth, rectum, or subcutaneously, or by combined methods, in doses sufficiently large not only to benumb pain or to procure an occasional sleep, but to obtain a condition of constant drowsiness, even sopor, and an effect on the pulse. When there is much vomiting, food ought to be withheld for half a day or a day. There are cases in which even ice pills furnish a new source of gastric irritation; still more frequent is the contraindication to carbonic acid gas, which, it is true, gives great relief in some cases either in alkaline water or in champagne. In the later stages of the disease, when the necessity of feeding becomes urgent, vomit-

ing may often be avoided by giving, either subcutaneously or on the tongue, undiluted, one or a few drops of Magendie's solution five minutes before the partaking of food. In the first days of acute peritonitis water is a greater necessity than food. When it cannot be introduced into the stomach, an ounce or two may be thrown into the rectum every hour or two hours without annoying it, and without inducing peristalsis of the intestinal tract.

Ice bladders or, if they be too heavy, iced cloths are applied to the abdomen to advantage; particularly when the inflammation is still local. When they are objected to, water of the usual temperature may be employed first, and the latter reduced gradually. Cold must not be employed too long in very young or anæmic children; in these, indeed, warm applications are tolerated best. As long as an acute peritonitis is still local (pericystitis, perihepatitis), leeches can be expected to do good. No purgatives must be given; in children peritonitis caused by constipation is exceedingly rare, and the recommendations of magnesium sulphate and other strong remedies as given in puerperal and other forms of peritonitis—though they may prove justifiable in the adult—do not refer to the infant or child. If it be desirable to relieve the intestinal tract to some extent, the incipient state of peritonitis may permit of a tepid enema gently administered, with or without the addition of a teaspoonful or half a table-spoonful of oil of turpentine added to half a pint or a pint of warm water. Rest to the intestinal tract is such an absolute indication that the locking up of the bowels for a week or ten days becomes a frequent necessity. The tympanites of peritonitis is not the result of constipation, but depends on the paralytic condition of the muscular layers of the gut brought about mostly by the œdematous effusion into its tissue. But when it becomes very annoying, or dangerous through pressure upon the diaphragm, some relief may sometimes be obtained by introducing one or more tubes of india-rubber into the intestine. External applications must not be made because of the danger attending renewed peristalsis. The question whether puncture of the intestine is advisable, with a view of allowing gas to escape, cannot be

answered for every case. Experience has shown that such punctures accomplished this purpose, but also that over-extension of the intestinal wall destroyed its elasticity and prevented the puncture from closing immediately. I have seen liquid fæces which had escaped into the abdominal cavity through the fine apertures made by the needle of the aspirator.

When the case turns out to be one of suppurative peritonitis, the accumulation of pus may be circumscribed (a local abscess) or the whole abdominal cavity is affected. In such cases there have occurred occasional perforations into and discharges through the intestine, ureters, bladder, or umbilicus, but it is not windfalls or godsendings we have to calculate upon. The choice is between an absolutely bad prognosis and the incision of the abscess, or laparotomy with proper after-treatment. The latter operation has also been recommended as a curative agent in tubercular peritonitis, and the number of reported successes is increasing. While we know that local tuberculosis is quite liable to heal spontaneously, we are still not justified in attributing the recovery of laparotomized tubercular peritonitis to that spontaneity alone, but must remember that a good empirical observation is of at least as great an objective value as a laboratory experiment made under different circumstances, or a microscopical drawing.

Chronic peritonitis, whether the outcome of an acute attack or an independent affection, has its own indications. The majority of cases are either traumatic or the results of previous diarrhœa, typhoid fever, or tuberculosis. Rest in bed, warm bathing, warm poultices offer great relief. Baths containing iodine, such as St. Catherine's, Kreuznach, and the internal administration of iodide of potassium or sodium (of iron only when there has been no elevation of temperature for some time) will contribute to the absorption of part of the exudation, particularly when the latter is very massive. An occasional vesicatory will be found opportune. Iodoform may be used as an ointment or be applied with collodion (1 : 8-12), twice daily, for a long time. Tincture of iodine is less efficient and more irritating. Ascites may require paracentesis, but I have seen many a case improved by iodides only, in connection



with other diuretics. Sparteine sulphate (scoparius) is one of the best, in daily doses of, altogether, one-half to one grain; roob Juniperi, in a number of teaspoonful doses daily, is also very effective. Both or either may be combined with the iodide. When the solid exudation is obstinate, the blue ointment may be used in addition to the iodide; it may be rubbed into the inner aspect of the thighs or forearms, particularly the former, twice daily, not however into the abdominal wall. Nothing is easier than to transform a mild chronic form into an acute peritonitis by friction and similar traumatism, and nothing more certain than that the modern "massage" craze has multiplied the cases. On the other hand, there is no better means of alleviation and prevention than the rest secured to the abdominal organs by the permanent wearing by the patients, or those who ever suffered from peritonitis, of a bandage easy enough not to annoy, but sufficiently snug to hold in position the jumble of formerly diseased and still vulnerable intestinal convolutions.

(To be continued.)

## DISEASES OF THE MOUTH (NON-SURGICAL).

BY F. FORCHHEIMER, M.D.,

Professor of Physiology and Clinical Diseases of Children, Medical College of Ohio, Cincinnati, Ohio, etc.

(Continued from October Number.)

### VIII.—DENTITION.

*Symptomatology.*—The fact that teething is a physiological process has given rise to a peculiar line of argument,—viz., that for this reason no harm can come to the subject as a result of the appearance of the teeth. On the other hand, the violent adherents of teething sicknesses have overlooked the equally well-established fact that morbidity of children is greatest during the first year of life, and so we have developed the

two extremes which have been mentioned before. The whole discussion of the symptomatology of dentition becomes a very difficult one because the reasoning *post hoc ergo propter hoc* has been constantly employed, much to the detriment of our conclusions. As far as the physiological nature of the process is concerned, it is but necessary to be reminded of the daily observation that every act which is physiological may become pathological, and, as a matter of fact, has been observed as being pathological. So that from the stand-point of deduction from other processes of the same nature alone we must admit that pathological teething, *dentitio difficilis*, does exist. It is the province of observation to determine to what extent and in what direction these symptoms of a normal process become abnormal, are developed. It is of equal importance, in addition, to establish the connection that exists between the process and the symptoms, and, if possible, to establish this connection by facts. Teething, in a healthy child, produces very few symptoms of any kind. This is admitted on all hands for the incisor teeth; it is claimed, however, that the molars and the canines always produce symptoms more or less intense in their nature. These symptoms can be grouped under two headings for convenience of discussion,—local and general. The local signs are said to be: salivation, redness, pain or itching, swelling, even ulceration. If we examine carefully into each one of these symptoms it may become possible to determine the relation it bears to teething. The history of the physiological flow of saliva in an infant is as follows: The maximum amount—*i.e.*, the greatest quantity—of saliva which flows from the mouth is found between the third and fourth month of life. Before this time it is *nil*, and from this time it begins to diminish. Now, this physiological flow of saliva is ascribed to an irritation produced upon the lingual branch of the fifth nerve by the lower incisor teeth. As a result of this irritation by teeth that are still within the jaw, but which are supposed to be growing rapidly so as to make their appearance within the next three or four months, reflex action is set up through the glosso-pharyngeal and facial nerves, producing an increased activity of the salivary glands. All this produced by the incisor teeth, which cause so little

irritation that the baby is put to bed at night without a tooth and taken up the next morning with one of its little incisors through! So few symptoms present that the watchful nurse, the anxious mother, and, possibly, the doctor have not even surmised the possibility of the child's teething, although they have been on the look-out for three months, since the salivation began! Now we come to another view of the question. The molars are about to come through; they have broad surfaces, four points, and if any tooth can irritate the mucous membrane of the mouth this is the one that does it. But if there is any salivation, it is very little compared with that of the third or fourth month of life; when it does occur, it is always due to some inflammatory changes in the mucous membrane of the mouth. The salivation, then, cannot be due to teething as a result of reflex mechanism. Its cause is a different one: the salivary glands are developing; any irritation is sufficient to set up a flow of saliva; the cortical salivary centres, the inhibitory centres, are badly developed at this time of life; and, lastly, the child has not yet learned what to do with this fluid which it has not been accustomed to have in its mouth heretofore.

The other local symptoms depend largely upon the nature of the child for their development. It is certain that a great many children get all of their teeth without the development of any local signs whatsoever. The physician must be on his guard not to accept as signs of teething all the many combined movements of hands and mouth that have been put down in midwifery lore as characteristic for this period. The putting of fingers into the mouth by the child may mean very much or very little. It may mean that the child has learned to use its fingers for the gratification of its highest pleasure and aim in life,—sucking; it may mean that there is some irritation, better pruritus, about the gums, for when there is pain, as in stomatitis ulcerosa, the child is very careful not to put its fingers into its mouth; finally, it may mean irritation very much deeper than the gums.

The fact that children do have pains during teething cannot be denied, but the case of the eruption of a wisdom-tooth in an adult is not to be looked upon as going very far to prove



that a child ought to have pain when it cuts a molar or an incisor. The wisdom-tooth in an adult is, to begin with, a more or less rudimentary organ, badly developed, frequently diseased, and in the lower jaw crowded through space not sufficiently liberal, bounded in front by the second molar tooth and behind by the lower jaw. Would a comparison with the pain produced by the permanent teeth not be a much fairer estimate of the number of children that suffer from teething? Observations in this direction would show that pain, swelling, redness is by no means as common as is generally supposed.

The remote symptoms that have been ascribed to teething are many, and in this connection are found the many impossible and improbable combinations that have played such sad havoc in pediatrics. In the present state of our knowledge it cannot be expected that a great many of these be discussed seriously, nor will it be at all satisfactory to any reasoning person to claim that because a certain disease occurs while a child is teething, this disease must necessarily be due to teething. The etiology of disease is by no means a closed book, but enough has been done to exclude impossible combinations. Any one claiming that an inflammation of a remote organ is due to teething, for example, would have to be able to make out a very much stronger case than would be implied in the mere statement of the two facts,—teething and inflammation. A great many of these combinations still exist, and they exist principally because authors deem it their duty to copy what has been written by others without sifting the evidence and without bringing their own experience to bear upon the subject. Again, it is difficult to rid one's self of preconceived ideas, and one who has been taught that certain combinations exist will find it a great task to discover the existence of something beyond the two combined points. On the other hand, one who has not been taught these combinations or who has disregarded them will, possibly, be just as likely to err in the opposite direction,—to disregard them. For these reasons an impartial judgment is very difficult.

What was said of the local symptoms may be said with equal propriety of the general symptoms: they depend for their development upon the nature of the child. Given a poorly-

nourished, badly-developed child, or one with a distinctly nervous, hereditary tendency, and it will suffer very much more from anything than one perfectly healthy. A child of this description will be less able to endure pain, will suffer more, and will, therefore, react more decidedly than one better prepared by reason of good condition.

A teething child, when it suffers at all, will be found to have changed its disposition for the time being. It becomes irritable, fretful, cross, difficult to amuse, has less appetite than usual, its sleep is more or less disturbed, and presents all the signs of what might be termed malaise in a young child. With this there may be a slight elevation of temperature, increased thirst, and rapidity of pulse. This condition usually precedes the eruption of a tooth and disappears suddenly either before or after the tooth has come through. The more irritable the child is, naturally, the more marked are these symptoms.

The symptoms on the part of remote organs can be grouped under the following heading: Symptoms on the part of nervous system, the digestive apparatus, the skin, the respiratory apparatus, the genito-urinary system, and the organs of special sense. For the nervous system it is principally convulsive disorders, partial or complete, that are ascribed to teething. The physiological facts that are brought in to explain these convulsions are as follows: In young children the inhibitory power of the brain is very much less than in adults, therefore any afferent impulse would be followed by a very much greater reaction than in the adult. This reaction is supposed to manifest itself in the form of generalization of reflexes,—i.e., convulsive movements. While these facts are perfectly correct from a theoretical stand-point, it does not follow that their application is absolutely so. In the case of teeth the afferent impulse is carried through the fifth pair of nerves to the medulla, and from here it is carried as efferent impulse by the nerves of the face and also the spinal nerves, not being restrained by the normal inhibitory power. The force that generates the nervous impulse is supposed to be pressure upon the peripheral termination of the nerve in the mouth. In order to get a convulsion from teeth, two things

must be taken into consideration : First, the amount of pressure or irritation ; secondly, the irritability of the nervous system, the whole or various parts of the reflex arc. It seems to me that the first element can be excluded, in that it alone could not quantitatively be held accountable for the convulsion. Such a statement is only justifiable as a result of comparison with something that is tangible, with some disease in which we are qualified to judge of the quantity of pain there is present. It is next to impossible to judge of how much or how little pain is produced by the tooth's pushing through the mucous membrane; the probabilities from a theoretical stand-point being that this quantity is very small. The reason for this statement will be found in the fact that the tooth has been pressing upon the nerve filaments for some time, producing functional paralysis, if not atrophy. It is more than probable that the pain of teething is the result of the catarrhal stomatitis that is always present, or of pressure upon neighboring teeth or tissues. In phlyctenular conjunctivitis or keratitis we have a disease in which we know that the pain and irritation are very great, and yet no author claims that this disease is followed or accompanied by general convulsions. We do find a tonic contraction of the orbicularis palpebrarum, but nothing more. It seems to be stretching a point to make the irritation of a tooth produce general convulsions, and the greatest irritation of one of the most sensitive organs of the body to be followed only by a local disturbance. Teething convulsions can be produced only, then, by a too great irritability of the nervous centres ; unfortunately, this can neither be proven nor disproven, so that there is nothing left but to take the statement of authors and to have recourse to observation. The authorities vary very much, and while, theoretically, the possibility of the production of general convulsions from teething cannot be denied, the probability of such a combination must be rejected. For myself, I am free to confess that I have never seen a case of teething spasms. In every case of convulsions that has come under my observation it has been easy to detect a much more plausible cause, which, when removed, caused the convulsions to cease. If we resort to the following method of determining the cause, how-



ever, our conclusions are not apt to be very convincing. Say we rub a tooth through in a patient ten months old; patient is fed upon improper food, slightly constipated; after having given a dose of calomel and the convulsions have stopped, it is not fair to ascribe the spasm to the poor, maltreated tooth. Yet this is being done daily, and the physician is not willing to admit that the convulsion is most likely caused by the absorption of some substance from the intestine, and not by the tooth. Even if the tooth fails to make progress and the wound which has been produced by the rubbing heals up, so that the local conditions are the same as they were before the doctor interfered and the child ought to have convulsions all the time, the course of reasoning is not altered; a child with convulsions, a doctor to rub, convulsions to cease, therefore the rubbing doctor cured the convulsions due to a tooth. For practical purposes it is much safer to say that teething never produces convulsions than to hold that convulsions, as a rule, are caused by teething. Even the manifestation of local convulsive movements ought to be carefully examined into before a positive conclusion is arrived at. It is not going too far to state that, as a cause for convulsions, teething ought to be looked upon as the last etiological factor and not as the first. Only after every other possible source has been examined into ought we to be willing to admit teething as a cause for spasms, since it is necessary to conceive of something,—a something that may exist and possibly does exist, but a something which is very rare, and, at the present, thoroughly unknown.

On the part of the digestive apparatus all forms of trouble have been attributed to teething, from the ordinary dyspeptic vomiting to a general affection of the whole alimentary tract. The mechanism of these lesions has been principally attributed to the irritation that follows the swallowing of great quantities of saliva. From what has been said before, it will be seen that this cannot by any possibility be the true cause, for the flow of saliva is usually very much diminished or has entirely ceased by the time that teeth make their appearance. In connection with diseases of the alimentary tract the teething theory has been followed by the most pernicious results. It would not be in accordance with daily observation to say that

teething does not have any influence upon the bowels, but this is to be by no means understood as intimating that it is frequently or directly the cause. The only effect upon the bowels is that they participate in the general irritability of the child. Just as the skin may become hyperæsthetic, so the bowels may become less tolerant, and an absolute adherence to physiological food will soon clear up the bowel complaint. In other words, at this time, the digestion will be interfered with to such a limited extent as to cause food, not strictly proper but well borne at other times, to produce disagreeable effects upon the bowels. It has been pointed out that teething diarrhœa has peculiar properties, so that it can be differentiated from other forms. I must confess that I have failed to find these. The stools may indicate a disturbance in any one or more sections of the bowel so as to be characteristic or not; the disturbance is of very short duration and always amenable to a strict diet. In some children constipation is supposed to be produced by teething; this, however, is most probably a coincidence. There is one thing that ought not to be forgotten in connection with the intestinal lesions produced by teething: the children are old enough to come to the table, they make known their wants, sometimes are able to satisfy themselves by getting what they want, and in every respect are most unlikely to be kept upon physiological food. There is no question of the fact that the more carefully children are watched, the more carefully they are fed, the less liable are they to teething diarrhœas. It has always been my firm conviction that if a child were kept upon absolutely physiological food, that child, provided it were otherwise healthy, would not have diarrhœa from teething. Here, as before, it cannot be too strongly insisted upon that the physician look to other causes besides teeth before he takes it for granted that he is dealing with teething diarrhœa. The peculiar fatalism of allowing a diarrhœa to go on because it is due to teething is perfectly unintelligible. The "checking the bowels" can do no harm, and danger can and does arise when the catarrh of the intestines is allowed to continue. Many a case of tuberculosis can be traced to this pernicious doctrine, many invalided children owe their bad health to this preconceived

notion, and many a life could be saved if only the trouble were taken to institute proper feeding, which can certainly not be harmful; this method can be pursued even where the physician objects to giving medicines to stop the diarrhoea. In addition, this doctrine engenders an amount of carelessness, both with physicians and laymen, so that grave lesions are frequently overlooked.

The symptoms on the part of other organs must be ascribed to coincidences. It would take a vivid imagination, in the present state of our knowledge of inflammation, to conceive of a production of a bronchitis by the wetting of a child's breast from the saliva, which is supposed to be present during teething. The same may be said of the presence of the gonococcus in urethral or vaginal discharges, which are supposed to be due to teething. As for the skin, young children do have delicate skins, the least irritation may produce a general eruption. A flea-bite will cause the child's skin to be covered with an erythema or an urticaria; the same can be said for a bed-bug or any insect sting. It is logical to conceive that an eczema may be set up by the irritation which follows a constant outpouring of saliva over the skin. But we fail to find any connection between teething and the various other forms of skin trouble that have been attributed to it, such as lichen, herpes, pemphigus, etc. The mistakes that are made in this direction frequently become ludicrous. It is not long ago that a child was brought to me with a "teething impetigo," which, notwithstanding the teeth had appeared and notwithstanding the internal use of all sorts of remedies, would not get well. To the great astonishment of all concerned, a needle put into one of the pustules succeeded in bringing out a small, black body, which, under a magnifying glass, disclosed itself as an *acarus scabiei*.

In teaching I have, for years, put down for my students an axiom that "teething produces teeth and nothing more." While the theoretical conceptions cause us to deviate slightly from this position, it will be found that the more acute the diagnostician, the more accurate and searching the examination, the nearer the truth this statement.

*Treatment.*—It would be waste of time to discuss the various



means and remedies that have been proposed in order to make teething easier. Whether we give to the child a hard or a soft body to put into its mouth is a matter of the utmost indifference, but one thing ought to be insisted upon: nothing which has a bad effect upon the digestive organs should be given to the child to facilitate teething. The only remedy at our command to insure normal teething is to keep the child in good health. To this end, at the time of teething as well as at all other times, the child must receive proper food, sufficient oxygen, be kept clean, and clothed properly. Such a child, without hereditary tendencies or acquired disease that may affect the teeth, will not be disturbed to any appreciable extent by teething. If we find that the child becomes irritable and cross at the time when teeth can be reasonably expected, it will be found advantageous to redouble our attention as to diet. At this time also, instead of keeping the patient in-doors for fear of catching cold, the opposite policy will be found very serviceable. Send the child out into the air as much as possible, nothing acts so well in a fretful child; it is not necessary to bundle the child up to suffocation. The dress of the patient should be suited to the season of the year; no bandages, no flannels, no woollens are necessary in summer; the cooler the child can be kept the more comfortable will it be. In winter the child should be dressed warmly; it is not necessary to protect any especial organ against any especial disease, either at the teething time or at any other. A great deal of discomfort could be spared children if laymen as well as physicians were able to shake off some of the old superstitions connected with the theory of catching cold.

If the child should have increased temperature, the lukewarm bath will not only control it, as a rule, but will also assist in removing the cause of the fever. In order to remove the cause effectually it will be found necessary, in some cases, to administer a laxative,—rhubarb or calomel,—to be followed up by washing out the large intestine. In other cases, where there seems to be no trouble from bad feeding (and this can be determined only by the strictest search into the history, including, if possible, an examination of the stool), it will be found that the internal administration of the bromides will

give the patient much relief in that it seems that the fever is due directly to some effect upon the heat-centres. Every one who has examined into the subject of infant-feeding will, I think, admit that no positive conclusion can be arrived at regarding the food of any ordinarily kept child without examining the stools. If those who are so quick at drawing conclusions between teething and diarrhœa would take the trouble to search the stools carefully, they might find reason to change their opinion. It is a very common occurrence to have both the mother and the nurse disclaim any error of diet and to find, upon examination, a piece of undigested potato, a bit of apple or some other equally unphysiological body in the fæces. Above all, it is wise for the physician to wait a little while before he makes up his mind that he is dealing with a dentition disease, so that he may examine his case carefully before he comes to a conclusion which has few chances in its favor. If this conclusion should be arrived at as a *dernier ressort*, the diarrhœa must be treated as any other diarrhœa would be. Whatever sovereign remedy the physician has he must use, especially in hot weather. Without wishing to disparage the use of the so-called intestinal antiseptics, I am free to confess that, to my mind, the profession is going too far in giving up the use of opiates in intestinal disorders of children. After the cause of the diarrhœa has been removed mechanically by washing out the stomach or the intestines, there is left in the stomach or intestines an anatomical change which opium, in its action, is especially fitted to benefit, and which is very little, if at all, affected by antiseptics. Without going too far in this discussion, it is but proper to state that we are not warranted in giving up the results of years of experience for a theory not, as yet, properly proven nor thoroughly worked out.

(To be continued.)

## SUMMER COMPLAINT.\*

BY W. S. CHRISTOPHER, M.D.,

Demonstrator of Chemistry and Clinician in Children's Department, Medical College of Ohio; Physician to the Home for the Friendless and Foundlings; Pediatrician to the German Hospital, Cincinnati.

THE true pathology of this disease, or group of diseases, is by no means settled; much remains to be learned before we can class our knowledge of it as at all complete.

The pathology of this affection comprises three divisions; *a*, its morbid anatomy; *b*, its bacteriology; *c*, its chemistry.

I have not attempted to enumerate these divisions in the order of their importance, because their exact relations to each other have not yet been determined, and consequently their relative importance is not yet known. I deem this somewhat trite statement necessary, because it has become the custom lately to discuss this disease from one or the other of these stand-points, according to the fancy of the writer, and with but little or no reference to the other divisions of the subject, and much more dogmatically than our exact knowledge will justify. With such limitation as the foregoing, on any dogmatic statements I myself may make in this paper, it may be permitted me perhaps to express my own views somewhat freely, without being subjected to the charge of inconsistency.

A case of summer complaint presents symptoms on the part of the bowels, on the part of the circulation, of the respiration, the kidneys, the skin, and the great nervous centres. In consequence of the number of organs and systems involved, and because of the great variation, both in intensity and in kind, of the symptoms presented by these several organs, the various phases of the disease are legion, and each individual case a study by itself.

The bowel symptoms are usually the most prominent. The stools, in point of number, are frequent; in consistency, they are watery; they are accompanied by flatus; their color varies,

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being sometimes yellow, more frequently green or bronze. The odor of the stools is, to me, a most important feature; practically it is always offensive, and can, in a very large proportion of the cases, be described as either sour or putrid. The stool is made up of the residue of the food and the serum, mucus, and other secretions given off by the intestine. The food of the infant is always, in whole or in part, milk,—that is, a mixture of proteid, carbohydrate, and fat; and this, together with the material supplied by the intestine itself, is quite sufficient to maintain almost any form of fermentation which may be started in it. Every stool from a case of summer complaint is a fermenting mass. How do we know this? Because, in the first place, we have in the stool (or the chyme which precedes it) the materials to maintain fermentation; second, we have the micro-organisms to induce it; third, we have the proper conditions of heat and moisture in the intestine to facilitate the fermentation; and, lastly, we have the results of the fermentation, the putrid products, and the sour-smelling fatty acids. The chemical recognition of substances and processes is not made solely in the test-tube. Any feature which is characteristic is sufficient for identification, and that the stools of summer complaint are fermenting masses is proven beyond the shadow of a doubt.

The odor of the stools enables us to recognize two great classes of fermentations, the one giving rise to acid-smelling stools, and the other to putrid stools. When I first suggested this classification, in a paper read before this academy (*Med. News*, March 3, 1888), I was not aware that Escherich had already made a similar classification. Escherich distinguishes the two classes of stools by their reaction to litmus, the one being acid, the other—the putrid stool—being alkaline. Of course, the difference in the reaction of the stools has long been recognized, but Escherich, I believe, was the first to refer this difference to the fermentations of the different foods. Personally I prefer the differentiation by means of the odor, as being more striking, more readily recognized by the attendants, and because it emphasizes the character of the fermentation. A putrid stool means fermentation of albuminous or collagenous material. How do we know this? Because no

other constituent of the stool can give rise to putrid products in any form of fermentation which it can undergo. Nitrogenous tissue is necessary for the production of a putrefaction. It would be as vain to attempt to extract gold from beeswax as to attempt to cause a carbohydrate to undergo a putrefaction. The source, then, of a putrid stool must be either the collagen of the mucus or the proteid of the food. Clinical evidence supports the latter view, although the mucus is probably involved later, or in chronic cases.

An acid stool has its origin in the fermentations of the carbohydrates and the fats found in the food. The chemical reactions involved in the development of fatty acids from carbohydrates I have set forth somewhat fully in a paper on "Superdigestion" (*New York Medical Journal*, November 9, 1889).

I am fully aware of the fact that proteids contain a carbohydrate nucleus, and in decomposition may give rise to carbohydrates or fatty acids, but the amounts so set free are merely nominal.

Besides the odor of the stools, their frequency and their watery consistency are features worthy of attention, but they are not facts which assist in forming any definite idea as to the nature of the disease itself.

On the part of the circulation we find that in well-marked cases the heart's action is increased in rate and weakened in force. The respiration is frequently interfered with, and is often shallow and sighing, as in shock; indeed, in a *foudroyant* case the conditions resemble shock very greatly.

The urinary secretion is greatly diminished. On the part of the brain there is sometimes wakefulness and restlessness, and at other times stupor. The pupils vary in different cases, being sometimes contracted, as in opium-poisoning, sometimes dilated, more frequently normal. Fever is a very irregular symptom.

The anatomical lesions in summer complaint are utterly inadequate to explain the complexus of symptoms, particularly in the acute cases.

It has become so customary to look to the morbid anatomy as the essential feature in disease, and as the cause of symptoms,

that it is a little difficult to escape from the thralldom, and to consider the morbid anatomy as a symptom due, like the other symptoms, to the true cause of a disease. That certain changes in structure produce certain other secondary conditions or symptoms cannot be doubted, but that they produce all the symptoms, or constitute the essential features of diseases, may well be questioned. Certainly, at least before acceptance, proof should be required.

The lesions in summer complaint have long been known, and treatment, in view of the lesions alone, has not been attended by such excellent results as might be expected.

What are the lesions of this disease? It will be fair to quote from the observations of L. Emmett Holt in answering this question, particularly as he seems to regard the lesions as of first importance. In the *Medical News* of June 9, 1888, we find that Holt divides the fatal cases, which he examined post mortem, into three classes: First, those lasting four days or less; second, those lasting from four to ten days; third, those lasting more than ten days. In the first class "alterations of the epithelium . . . were almost the only changes," and post-mortem changes were so rapid that no significance could be attached to these, unless the autopsies were made six hours after death. This is much the same as saying that in cases lasting only four days before death ensues there are no anatomical changes at all.

"In the second class there were found, with considerable uniformity, degenerative changes in the epithelium of the tubules of the intestine, those in the stomach being less constant. There was marked infiltration of the solitary follicles of the colon, and to a less degree of the small intestine, with similar changes in Peyer's patches.

"The solitary follicles had ruptured in many places, but there were no ulcers. There were no important changes in the submucous coat, except a sprinkling of new cells in its superficial portion.

"In the third class well-marked lesions were found in the intestine, usually involving all the coats. Those in the colon consisted of infiltration of the mucous membrane with new cells, in great numbers, obliterating many of the simple follicles; the



submucous coat was crowded with round cells, quite to the muscular coat, sometimes even invading this. There were superficial ulcers involving the mucous membrane only, and deeper ones reaching quite to the muscular coat, but none invading this coat had been met with. These were follicular in their origin. The most marked changes in the mucous membrane were found near these follicles. The lesions were not uniformly distributed, nearly healthy follicles being found quite near those which were completely disorganized.

"In the large intestine the cæcum, sigmoid flexure, and upper part of the rectum were the portions in which the most advanced lesions were met with. In the small intestine the changes were usually limited to the lower part of the ileum, and were not nearly so marked as in the colon. Peyer's patches were swollen and often ruptured, but no ulcers of any moment had been seen about them, nor about the solitary follicles here. In a few instances patches of false membrane were seen in the colon. . . . *We can be pretty certain that at the end of three weeks lesions of a good deal of importance exist in the intestine.*"\*

What rôle are these lesions supposed to play? The only thing which they can do, if they do anything at all, is to produce symptoms. Can we look to these morbid changes as the cause of the ocular phenomena, as the cause of the heart's depression, as the cause of the respiratory perturbations? Yes, if we can believe that reflex action can do anything which a brilliant imagination demands for it. When we find reflex action invoked to prove that dentition causes diarrhœa, and that lumbricoids cause tetanus(?), which persists more than a month after their removal (*Jour. Amer. Med. Assoc.*, November 9, 1889), it seems about time to call a halt, and see whether we are justified in such wholesale deductions. In all candor, we must admit that there is as yet no scientific proof showing that the lesions in summer complaint are sources of irritation to sensory nerves, or that these nerves convey these impressions to the brain, or that such impressions, if so made, are conveyed to the centres involved in producing the symptoms

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\* Italics not in the original.

noted in the eyes, in the circulation, and in the respiration. The apparently close relation between the lesions and the bowel symptoms would seem to indicate that these at least find their cause here. As a matter of fact, there is no better proof of a causal relation here than there is with regard to the other symptoms. On the other hand, I know of no positive proof that such a causal relation does not exist.

Furthermore, the tissue involved in the lesions is practically entirely adenoid tissue, and from the manner in which this tissue reacts to irritants of a chemical or bacteriological character, as is exemplified in affections of the so-called lymphatic glands, we might suppose by analogy that the lesions are produced by poisons absorbed from the intestine. But this is not proven; arguments supporting this view will be advanced further on.

The most conclusive proof of the subordinate position held by the lesion is the fact that the severest cases, those which terminate fatally within four days, have no lesions at all. It has not yet been shown that any of the forms of summer complaint are due to the action of a specific micro-organism multiplying in the blood. There certainly are bacteria in great plenty in the intestinal canal, the organisms which induce the fermentations there progressing.

The etiological importance of hot weather in the production of this disease has been shown time and again. The recent observations of Seibert in this direction are particularly interesting. It must be admitted that the disease occurs with much greater frequency in hot weather than in cold, but it is certain that the heat acts indirectly and not directly. Notwithstanding the statements which have been made as to the direct effects of the heat in the production of so-called sun-stroke, there is no proof that the heat acts directly upon the brain and in this way produces the nervous symptoms manifested. Nevertheless, hot weather is an important factor in the production of summer complaint.

Improper feeding is usually classed as an important factor in the production of summer complaint. But inasmuch as the exact conditions of proper feeding in infancy are not matters of agreement among pediatricians, it would be difficult to tell

what is meant exactly by the term improper feeding, beyond that bottle-feeding may be termed improper in this sense, because a so much larger proportion of babies so fed are the victims of summer complaint. Without going into detail on this important but vexed subject, I may say that my own opinion of the proper food for the *healthy* infant is a sterilized food, and that its exact chemical composition is a matter of secondary importance.

Poverty and its attendant evils, particularly overcrowding in tenement houses, have also been shown to be concerned in the production of this disease.

But summer complaint occurs in the homes of the rich; it also occurs in babies apparently properly fed at the breast, and it also occurs in cold weather; so that the three etiological factors enumerated cannot be considered as more than predisposing causes. To what does such a group of causes predispose? Poverty and overcrowding mean dirt, and dirt means micro-organisms; hot weather means the most favorable temperature for developing these germs; and bottle-feeding means the best possible plan of introducing these micro-organisms into the alimentary canal.

We have now considered this disease from the stand-point of its symptomatology, where we found the stools to be fermenting masses; and also from the stand-point of the universally recognized predisposing causes, by means of which we were enabled to trace the means for inducing and maintaining abnormal fermentations into the very stomach of the victim.

We may now discuss somewhat more fully some special clinical features of the disease.

Classifying the cases according to the odor of the stools, it has been found that the more severe cases, so far as symptoms on the part of the nervous system are concerned, are those having putrid stools. Many cases with putrid stools present no other symptoms than those on the part of the bowels, and from this exceedingly mild form of the disease the cases vary up to those *foudroyant* cases which run their course in a few hours. In all forms of putrefaction, so far as is known, ptomaines are produced, and while all ptomaines do not have physiological effects, yet ptomaines having such widely differ-



ent properties have been isolated that we may look for any symptom from their action which may be produced through the nervous system. Already ptomaines have been found which produce effects like those produced by morphia, atropia, strychnia, and curare. In addition, fever-producing ptomaines are known. In a putrid stool are all the conditions necessary for the production of ptomaines. What particular ptomaines are formed in a given stool will depend upon the particular micro-organisms present, and upon the special kind of nitrogenous tissue involved in the fermentation, and as well the duration of the process. While the direct proof of the action of ptomaines in producing the symptoms in these cases is wanting, still the necessary conditions are all present, and such an explanation is rational and much more satisfactory than other theories in accounting for the symptoms. Thus it is quite possible to have, as the result of the action of absorbed ptomaines upon the central nervous system, depression of the heart's action, and of the respiration, to have wakefulness or stupor, to have dilatation or contraction of the pupils, to have fever, to have catharsis. Chemical substances can produce all of these symptoms. It is quite possible to have such substances formed in the fermenting masses in the intestines. Such an hypothesis will account for the great variation in symptoms presented by different cases, and for the wide variations in severity found. It does not seem rational to call a relatively mild case summer diarrhoea, and to call another cholera infantum, which has the same symptoms, and only the same symptoms, as the former, but in a much more aggravated form.

In many cases of constipation we find the same depression, the same stupor, in general the same nervous symptoms, which we find in diarrhoea; and when the bowels are moved a putrefying mass is ejected. It seems that there are here essentially the same conditions that are present in summer diarrhoea, the only difference being in the consistency and frequency of the stools. I wish to be understood as including these forms of putrefactive constipation under the general term summer complaint. In the constipated form of summer complaint, probably more often than in the diarrhoeal form, is fever pres-

ent; and this fever disappears when the bowel-contents are removed. It is not without significance that the laity regard castor oil as the proper remedy for fever in children. If it were not for the great prevalence of this idea among the laity, we might be better acquainted with the fever of constipation.

It is highly probable that the lesions in the intestinal walls in summer complaint are produced by the fermentations in the canal. The intestinal contents are unquestionably abnormal, and presumably of an irritant nature to the structures with which they come in contact. This is the more likely because the changes in the mucous membrane advance as the disease is prolonged, and are very like the changes produced in adenoid tissue elsewhere from the absorption of so-called irritants. What the irritants are is uncertain, but it is probable that the micro-organisms act here, as elsewhere, by means of their chemical products. It seems at first sight rather far-fetched to ascribe to chemical substances the power of producing anatomical changes, but a little closer examination reveals great possibilities in this direction. It has long been admitted that the primary anatomical changes in cirrhotic liver are produced by the chemical substance, alcohol. The ptomaine mytilotoxine, obtained by Brieger from the poison mussel, is capable of producing the lesions of urticaria. The observations of Cheyne and Councilman show that if glass capsules, containing croton oil or turpentine, be placed aseptically in subcutaneous tissue, and after the wound has healed the capsules be broken, suppuration results. Examination of the pus shows that it is free from micro-organisms. Other observers state that the result of this procedure is not true pus. Be that as it may, a structural lesion has certainly been produced under the influence of a chemical irritant alone. Still more important is the undisputed observation of Grawitz and Scheurleu, that aseptic suppuration results from the injection of aseptic solutions of the ptomaines cadaverine and putrescine.

The cause of diarrhoea in acid fermentation in the intestine is not clear. Ptomaines are nitrogenous bodies, and therefore cannot be formed from the carbohydrates or fats which maintain the acid fermentation.

In the chronic forms of summer complaint there can be no

doubt but that the lesions present assist in keeping up the disease. How they do this is not known, but it seems probable that, like wound surfaces generally, they form favorable locations for the growth of micro-organisms, possibly supplying them with food which is denied them in the intestinal contents.

If a case of recent putrid intestinal fermentation be limited to a non-albuminous diet, the putridity will cease within twenty-four to forty-eight hours. And this will follow whether the stools be of a diarrhoeal or dysenteric type, whether the patient be an infant or an adult. I have tried this experiment many times, several hundred times in fact, and I venture to say that the reaction is quite as certain as if we were dealing with a test-tube instead of an intestinal canal. It is no doubt true that a putrid fermentation in the intestine of a breast-fed baby, which continues to receive the mother's milk, may cease after a time, but it is likewise true that it does not cease nearly so soon as when the albuminous food is withheld. It may be asked, Why does it cease at all if the albuminous food continues to be given? In the first place, the frequent stools and the laxative usually prescribed assist in removing the microbes and their food; next, the intestinal antiseptics administered no doubt have some effect in controlling the fermentations; and, lastly, in any fermentation, the accumulation of its products hinders and finally stops the action of the micro-organisms inducing it. If now, in addition to other means, the micro-organisms are attacked on the starvation plan, by withholding the food upon which they are living, an additional and a most powerful weapon has been brought into the fight.

The non-albuminous foods which can be given to an infant are not very numerous. Some thirty years ago, Moore treated summer complaint with a diet of cane-sugar. Among the starchy foods, arrow-root and rice are most free from proteids.

If it be considered objectionable to administer starch to an infant, the arrow-root or rice may be transformed into sugar by means of malt diastase.

When such a food is administered to a case of putrid diarrhoea, the putridity ceases within twenty-four to forty-eight



hours, even when no medication is employed, and in the great majority of instances the resulting stools are of the acid type. It is impossible to say whether this acid fermentation was present with the putrid fermentation and merely masked by it, or whether it has been initiated by the carbohydrate administered as food. But whichever be true, it is certain that a simple and comparatively unimportant fermentation has been substituted for the threatening and even dangerous putrefaction. With the disappearance of the putrefaction, the number of stools usually diminishes, and the nervous symptoms disappear. The case is now in shape for the administration of lactic acid according to the method of Hayem, but I have not found its use attended with the good results hoped for, the reason probably being that the lactic acid did not reach the seat of the trouble in the intestine. At any rate the diet should be maintained in order to prevent the fermentation relapsing into the putrid form. Intestinal antiseptics may now be employed, and in the event of their failure, resort to opium or other astringents may be had, as no danger of head symptoms is to be apprehended from locking up in the bowel the products of the acid fermentation. However, care must be taken not to use the opium too soon, for if the fermentation be not quite thoroughly controlled, it will only be hidden by the drug, and break out afresh, with renewed symptoms and a greater tendency to chronicity.

In a case which has acid stools from the beginning the food should be albuminous,—that is, white of egg,—preferably salted. Here trouble is liable to arise from the starting of a putrid fermentation by the albumen. Ordinarily, however, the disease can be checked before any such trouble arises.

In practice, certain apparent exceptions to the results of feeding here set forth are met with.

In my own experience, these exceptions may all be placed in one or the other of the following classes:

1. Inmates of foundling asylums who are exposed to continuous infection.
2. Individuals exposed to the three great predisposing causes, who likewise are exposed to frequent reinfection.
3. Cases in which the fermenting material is supplied from

the intestinal wall itself, and consisting of serum, mucus, and other secretions.

4. Cases in which advanced lesions exist, and in which the abnormal fermentations are maintained in the intestinal walls themselves, at the seat of the lesions, and by material other than the intestinal contents.

I have not introduced statistics to prove the positions herein taken, as I regard them as an exceedingly unreliable means of arriving at scientific truths, and much inferior to the matured judgment of a conscientious observer. I have seen cases classed as "well" by competent pediatricians which in my own statistics could only take a place in the list of the "improved;" but the impossibility of comparing the statistics of different observers is so well recognized that it need not be further discussed. During the past three summers I have employed the plan of treatment here described, and with increasing satisfaction. Previous to that time my treatment consisted of an absolute milk diet, and opium as the sheet-anchor by way of medication. I still meet cases where the milk diet must be employed because of the unwillingness of the mother to wean her babe, and these cases invariably progress less favorably than those put upon the other diet.

In conclusion, the following summary is presented :

1. Various forms of abnormal fermentations occur in the bowels, and when they occur in infants, and produce symptoms, they constitute the immediate cause of the collection of diseases known as summer complaint.

2. Summer complaint so defined includes putrefactive constipation and all forms of diarrhoea and dysentery not diphtheritic in origin nor symptomatic of septicæmia.

3. The three great predisposing causes of summer complaint, viz., hot weather, overcrowding, and bottle-feeding, are to be regarded as acting solely as adjuvants to fermentation.

4. The diet during summer complaint should be determined entirely by the conditions within the bowels, and not by theoretical ideas as to Nature's food.

5. At least two well-marked forms of abnormal intestinal fermentation may be recognized clinically,—viz., the putrid and the acid.

6. In the putrid fermentation, carbohydrates should constitute the food, and in the acid form albumen should be the only food.

7. Milk, containing, as it does, both proteids and carbohydrate, should be prohibited in all forms of intestinal fermentation. When properly sterilized, food can be given; nursing babies with severe summer complaint should be taken from the breast.

8. All food administered, of whatever type, should be aseptic.

9. In addition to regulating the diet on the foregoing principles, the treatment should include laxatives and intestinal antiseptics.

10. The lesions are to be regarded as the results of the fermentation, and are more marked in proportion to the duration of the disease.

11. The lesions assist in prolonging the disease, and in all probability act by providing a habitat for the micro-organisms, and by their secretions furnishing the micro-organisms with material with which to maintain their biological activity.

12. In chronic cases, where well-marked lesions may be supposed to exist, lavage of the large intestine and of the stomach, with appropriate antiseptics, is indicated.

13. Opium is contraindicated except in persistent acid fermentation, which threatens to produce anatomical lesions.

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## IS PLEURISY IN CHILDREN TUBERCULAR?

BY J. M. ANDERS, M.D.,

Professor of Hygiene and Clinical Professor of Children's Diseases, Medico-Chirurgical College, Philadelphia; Physician to Episcopal and Philadelphia Hospitals.

AMONG children over two years of age pleurisy is a disease of common occurrence. It may be safely stated that, as a rule, the complaint is not immediately fatal, although the danger of its leading to other forms of serious disease is generally con-



ceded. Professional opinion is divided as to whether or not this disease is of tubercular nature. Brief notes of five cases of pleurisy, which have come under my own observation, will be here recited.

CASE I.—Harry H., aged seven years, was taken ill November 10, 1879, beginning with slight fever and the signs and symptoms of ordinary bronchitis, the cause of his illness being exposure to alternations of temperature. I first saw him on the fourth day of the disease, and obtained at once a history of tubercular disease, both on the father's and the mother's side. His previous illnesses had been frequent attacks of acute bronchitis, occasional attacks of "congestion of the brain," and cholera infantum when a babe. On making a physical examination of the chest, detected the signs of bronchitis and pleural effusion on the left side, the sac being not quite half filled. Active treatment was instituted, and at the expiration of three weeks from the date of my first visit all of the fluid, which was doubtless serous, was absorbed. This child has since had several attacks of bronchitis, but no brain trouble nor recurrence of the pleurisy. He is in excellent health to-day, ten years after the attack of pleurisy.

CASE II.—R. S., female, aged four years, fell sick October 8, 1880. Two days later I was called, and found her with fever (temperature 102° F.), distressing cough, face slightly congested, and rapid, superficial breathing. Physical exploration revealed the signs of acute bronchitis, and of effusion into the left pleural sac, which was a little more than half full. In this case the fluid was, according to my notes, all absorbed at the end of two weeks. Though not robust, the child has since that time—now nine years ago—enjoyed fair health. It should be noted that from babyhood the child was thin, pale, and invalidish looking, probably on account of the fact that, on the father's side, nervous diseases and phthisis have, for several generations back, been hereditary.

CASE III.—In November, 1884, G. K., male, aged five years, was brought to my office for examination and treatment. It was observed at once that the child's breathing was greatly embarrassed. Physical examination showed the right pleura completely filled with fluid. The father, who brought the

child, stated that during the previous night breathing had been very difficult. Finding, on the next day, that the dyspnoea had not been improved, but there being, in addition, marked interference with the circulation as shown by lividity of the eyelids, lips, and finger-tips, I performed paracentesis on the evening of the same day, Dr. George B. Miller assisting. More than one pint of serum was taken, and the child's condition began to improve forthwith, day by day, until he had fully recovered from the disease; and this had taken place before the end of the third week without the slightest disfigurement. There is no hereditary taint in this boy, and down to the present he has been very healthy.

CASE IV.—H. T., male, aged fourteen; was seen by the writer in the spring of 1882, in the practice of Dr. W. Buckby (during the latter's absence from the city). The family history was good. The boy was extremely emaciated, weak, had moderate fever, and a hard, though not very frequent, cough, with considerable dyspnoea. The physical signs following were elicited: Inspection showed the left side of the thorax to be fixed and somewhat bulging, while the heart's apex-beat was, on palpation, found to be near to the sternum, on the right side. Percussion note quite flat over the whole of left chest, excepting at extreme apex anteriorly and along the spine on the same side down to mid-scapular region, over which small area it was tympanitic. Auscultatory signs consisted in almost complete absence of vesicular murmur and greatly diminished vocal resonance over lower two-thirds of this lung and distant tubular breathing over upper portion. Thoracocentesis was performed by Dr. W. Buckby a few days later (the writer being present), over one pint of purulent matter being removed. The boy's general health, subsequently, seemed to improve for a time, the effusion, however, gradually returned. He was then taken to the Jefferson College Hospital, where his chest was thoroughly drained, after which he slowly recovered. I saw him one year after; he was feeling well, had normal breath-sounds, and the wound had quite healed, though the left chest was still slightly retracted. About two years later I again saw him, and found him with a symmetrical chest and good general health. He has since then

enjoyed good health without the slightest tendency to trouble with his lungs.

CASE V.—A little girl, aged three years and two months, had been ill for two months when I was requested, by Dr. E. B. Wheeler, to see her for the purpose of drawing off the contents of the left pleural cavity, which was well filled. The empyema having already pointed in the fifth interspace, in the inframammary region, a free incision was made, and the chest allowed to drain itself thoroughly. Dr. Wheeler has informed me that a few days after the operation the wound retracted over the ribs and drainage ceased. Soon after this occurred the child began to expectorate pus and some blood, in consequence of which fortunate accident further operation was deferred, and finally proved unnecessary. One month after opening the chest the child was perfectly well, and has been in robust health down to the present. Dr. Wheeler assures me there has been no phthisical tendency manifested since recovery from the empyema (more than four years ago), August 30, 1885.

In a recent address, Bowditch\* adduces "some of the various opinions held by eminent men in different countries as to the nature of pleurisy." Landouzy, his pupils Joanne † and Mayor, ‡ believe nearly all cases of pleurisy to be tubercular. Germain Sée§ says three-fourths, and Strümpell|| "the large proportion." Among the numerous acknowledged authorities holding more temperate views may be mentioned Chauveux, Rühle, Gerhardt Niemeyer, Sir Andrew Clark, Anstie, B. F. Westbrook, Loomis, and, more particularly, Shattuck. ¶

V. Y. Bowditch also cites several authors whose views are

\* President's address before the American Clinicological Association, 1889, in comparative results in ninety cases of *pleurisy*, with special reference to phthisis.

† Joanne (J. R. G.), "Du Prognostic éloigné de la Pleurésie," *These*, Paris, 1881, p. 61, No. 230.

‡ Mayor (Alvis), "De l'Avenir des Pleurétiques," *These*, Faculty de Médecine, Paris, 1887, No. 181.

§ Sée (Germain), *Boston Medical and Surgical Journal*, March 11, 1886.

|| Strümpell; "Text-book of Medicine" (translation), p. 244.

¶ Quoted by Bowditch, loc. cit.



almost directly opposed to those of Landouzy and his followers. Theodore Duncin, of Warsaw, "claims that the tubercular pleurisy, where miliary tubercles begin on the pleura, is a rare disease," but, on the other hand, contends that most pleurisies are the result of pulmonary tubercles which cannot be detected by physical signs. Blachez relates a number of cases classed as simple pleurisy which have never in later years developed the least pulmonary trouble, and with this experience that of E. Martin coincides.

Austin Flint analyzed forty-seven cases, and in three only did phthisis subsequently develop, while of fifty-three cases reported by Blakiston, "not one became phthisical during several years after recovery from pleurisy."

As the result of a careful analysis of ninety-two cases, Dr. Vincent Y. Bowditch\* asserts, with good show of reason,—  
 "First, That whether we can prove absolutely, by such statistics, that all pleurisies are tubercular or not, yet a large percentage of these patients who were afflicted with pleurisy, often in apparently chronic form, recovered their health, and have never had any recurrence of the original trouble, nor development of subsequent pulmonary or otherwise tubercular trouble.

"Second, That while undoubtedly there are many cases in which an attack of pleurisy is followed within a comparatively short space of time by pulmonary tuberculosis, and, therefore, special care should be taken of the patient during convalescence from the former disease, yet we are not justified in giving such gloomy prognosis as we should be inclined by accepting the extreme views held by Landouzy and his followers."

In the opinion of Eustace Smith, † "a *purulent* effusion in the chest precedes tuberculosis much more often than it follows it."

In speaking of the disfigurement which occurs as the result of a sero-fibrinous exudation, E. N. Whittier and H. F. Vickery state that, "in the course of months and years much

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\* Loc. cit., p. 12.

† "Diseases in Children," p. 453.

of the deformity disappears, but in the mean time it is obvious that the patient is more than ordinarily liable to bronchiectasis and tuberculosis.\*

A. T. Cabot tells us that, "in the majority of cases, they (pleurisies) are secondary to some other disease either general or local."

But though my own experience with pleurisy occurring in the adult is in agreement with those authorities before cited, who contend, more especially, that long-standing empyema is very apt to lead to the development of tuberculosis, yet it is seen that in all of the five cases of pleurisy with effusion, herein reported, occurring in children recovery was complete, and that none of these patients have developed the slightest phthisical manifestations. These cases have not, however, been recorded to show that the chances of recovery are greater among children than adults, more particularly under operative treatment, since this has been done by W. and M. Ginier,† of Montpellier, but my purpose is rather to emphasize, so far as this limited number of cases goes, the fact that the tubercular nature of the disease has not yet been set at rest. It seems to me it would be quite unjustifiable to attribute any manifestations of phthisis that might be developed in these subjects in the future to the original attacks of pleurisy or empyema, and this for the reason before intimated that not the slightest evidence of tuberculosis in any organ of the body has been exhibited from the time of full recovery to the present moment, a period of time ranging from four to ten years.‡ To attribute a case of tuberculosis to an attack of bronchitis, from which the person may have suffered and recovered five years previously, would be quite as warrantable. Rheumatic pleurisy also occurs both as a primary and a secondary affection. It would be useless, however, to deny that in children pleurisy is frequently associated with generalized tuberculosis.

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\* "Cyclopædia of Diseases of Children," vol. ii. p. 691.

† See Meigs and Pepper's "Diseases of Children," p. 242.

‡ Bowditch takes a similar view.

## Clinical Memoranda.

### CERVICAL OPISTHOTONOS IN INFANCY.

A CLINICAL LECTURE DELIVERED AT THE NEW YORK  
POLYCLINIC.

BY L. EMMETT HOLT, M.D.,

Professor of Diseases of Children.

THE cases which I have to present this morning all bear upon a single symptom not of very great frequency, but of considerable interest in infancy,—cervical opisthotonos.

This symptom may depend upon many pathological conditions.

CASE I.—This first patient, who has been referred to the clinic by Dr. Gibney, is a stout, well-nourished child of three months. The mother has noticed that since birth the head has been persistently drawn backward so that the face looks nearly upward. She states that this symptom has been almost constant. At the present time there is marked rigidity of the posterior cervical muscles, which can be overcome, but not without the use of considerable passive force. On examination of the sterno-cleido-mastoid muscles, the characteristic swelling, which occurs in early life as a frequent cause of torticollis, is found to be absent. There are no signs of sterno-mastoid hæmatoma. The child shows no signs of pain; there is no facial paralysis or strabismus, the pupils are regular and respond to light; and, in fact, nothing abnormal can be discovered except the almost constant opisthotonos.

In a case like this the question arises, Is this simply a muscular condition of very little significance, which will probably pass away spontaneously in a few months, or is this the first of a train of symptoms which may eventuate in some serious disease of the brain?

My own impression regarding this case, founded on the well-nourished condition of the child, and the entire absence of any disorder of the intestinal tract, is that the symptom here need give us no concern; that with the increased power of the opposing muscles which time will bring, the contraction will be entirely overcome. We shall use no treatment in this



case, and the mother will report in two weeks, so that we may judge what has been the progress of the case uninfluenced by any medicine.

Some writers have been inclined to look upon these milder cases as of rheumatic origin, having found a certain amount of muscular soreness associated with the spasm, as in the form of torticollis, so frequently observed in older children. Although this explanation of the case seems a very rational one, for my own part, I have never been quite convinced of the dependence of this symptom upon rheumatism in any single case.

Two weeks subsequently the case returned, and again one month later. At the second visit, there was a very marked improvement, the opisthotonos being slight and only occasionally present, while at the third visit, it was scarcely noticeable.

CASE II.—*Cervical opisthotonos depending upon a cerebral lesion.*—This second child is seven months of age, a very large, fat boy, who presents two striking symptoms,—viz., marked retraction of the head and increased size of the head. The mother states that these symptoms are of three months' duration. On examination, we find the head to be nineteen inches in circumference, the sagittal and coronal sutures separated one-half inch, the fontanelle large, tense, and bulging, and a spot of cranio-tabes over the left parietal bone. The retraction of the head is in this case exceedingly marked; the child can be raised from the table without the chin touching the breast. The spasm cannot be overcome without a great deal of force; the muscles stand out tense and rigid. There is no nystagmus, facial paralysis, or strabismus, nor is there any impairment of motion or sensation in the lower extremities. The limbs are quickly withdrawn from the slightest touch of a pin, and the knee-jerk is slightly exaggerated. As regards the mental condition, the child is restless and irritable; but there is no drowsiness or stupor, and nothing approaching convulsive movements. The temperature is not elevated; pulse and respiration are normal.

The history as given by the mother is as follows: The child is the youngest of five, all the others being alive and healthy. There is no evidence of tuberculosis in the family history. The birth of the child was natural; he has been nursed by the mother, and has always appeared plump, hearty, and well nourished. For the first three months nothing abnormal was noticed; but since that time the head has been steadily increasing in size, and the opisthotonos has been constant. There is no history of convulsive attacks, although the mother describes some irregular trembling movements occurring some three months ago.

Manifestly here our diagnosis must rest upon the two symptoms,—hydrocephalus, about the existence of which there can

be no question, and opisthotonos. Regarding the seat of the lesion which would explain both of these symptoms, we can have no hesitation in locating it at the base of the brain. It seems fair to suppose, from the history and from the symptoms, that a single lesion will explain them. The most probable diagnosis in a case of this description, and with this history, is chronic basilar meningitis, or a tumor at the base of the brain. In either case, I think, the hydrocephalus is to be regarded as secondary. It seems reasonable to suppose from the history that the hydrocephalus is not congenital. The labor was natural, and nothing abnormal was seen until the infant was three months old. The fact that the two symptoms—enlargement of the head and opisthotonos—developed about the same time would seem to point to a single cause for both.

Hydrocephalus may be caused by a tumor at the base pressing upon the aqueduct of Sylvius, or by thickening of the meninges in the posterior fossa of the skull by closing the openings from the fourth ventricle to the surface of the medulla at the points of exit of the glosso-pharyngeal nerves. Such obstruction is probably produced in most cases of tubercular meningitis seen in children; and hence the term "acute hydrocephalus," which was formerly applied to the disease.

Basilar meningitis in infancy may be either tubercular or simple in its character. Neither is very common at the age of this little patient.

The absence of any hereditary history of tuberculosis in this case is not to be regarded as having any special weight in deciding between these forms. The presence of a clear history of tuberculosis would be of positive value. Decidedly against tubercular meningitis in this case are, first, the age; secondly, the duration of symptoms; and, thirdly, the child's general condition. Tuberculosis is exceedingly common in infancy, but it is usually a widespread affection, and although at autopsy we nearly always find a few tubercles in the brain, it is very rare to meet in infancy with the classical cases of tubercular meningitis such as we see in children of from two to ten years. The fact that the symptoms here have lasted four months is a pretty strong point against tubercular meningitis. It is not common for such well-marked symptoms as we have here to continue more than four or six weeks when due to tuberculosis of the meninges without the addition of fever, convulsions, or some other pretty active symptoms.

The fact that the child's general nutrition has not suffered in the least, so far as we can learn, and that there are no signs of disease in the lungs or intestines, and no history of cough or diarrhoea, justifies us, I think, in excluding general tuber-

culosis, and with this also almost positively tubercular meningitis.

And now, as to a simple basilar meningitis. This is not a common affection in infancy, yet it does occur. It is sometimes syphilitic, but I can find nothing in the history or the examination to warrant such an opinion in our patient. Drs. Gee and Barlow published in St. Bartholomew's Hospital Reports, some years ago, a series of six cases of simple chronic basilar meningitis in infancy in which the diagnosis was confirmed by autopsy.

If meningitis exists in our patient, the variety, I think, must be that just described.

As between meningitis and a basal tumor, the diagnosis is always difficult and sometimes impossible. The absence of convulsions and of focal symptoms are against tumor. The condition of the optic nerves sometimes throws a good deal of light on the diagnosis. The presence of a slight degree of optic neuritis is consistent with either view of diagnosis; a high degree of optic neuritis points strongly to tumor; healthy optic disks point to meningitis. I have asked Professor Pooley to examine the eyes, and he reports that there is no evidence of disease in the optic disks. This result accords with our other symptoms which indicate meningitis.

There are perhaps only two things more which may aid us in our diagnosis,—viz., the progress of the case, and the effect of treatment. In meningitis, the progress of the case is more likely to be interrupted and irregular, and we are more likely to effect something by treatment than in the case of tumor. For the present, I shall regard the case as one of simple chronic basilar meningitis.

[The child was put upon twenty grains each of the iodide of potassium and the bromide of sodium daily, and at the end of three weeks there was very great improvement in the opisthotonos, but no apparent change in the hydrocephalus.]

In connection with the two cases just shown, I wish to recall to your minds a case that was shown at the clinic about two weeks ago. A wasted, bottle-fed infant, three months old, who had always suffered from gastro-intestinal catarrh, due to improper feeding and the worst of hygienic surroundings. You will remember that when she was presented to the class, opisthotonos was quite as marked as in the case just shown. The child had a rectal temperature of  $103^{\circ}$ . Two convulsive attacks were witnessed while she lay upon the table, and this grouping of the symptoms led several of the gentlemen who saw her to make an unqualified diagnosis of tubercular meningitis. The child was admitted to the wards of the Babies'



Hospital that same day; and the vomiting was persistent for twenty-four hours in spite of stomach-washing. She was then put upon koumiss, and the vomiting entirely ceased; in a week the stools, which hitherto had been green and mucous, were very much improved. At the present time, the opisthotonos has completely disappeared, the stools are perfectly normal, she is taking peptonized milk, there has been no vomiting for over a week, and during the past week she has gained seven ounces in weight. At the time of her admission to the hospital her weight was four and three-quarter pounds.

Persistent opisthotonos is not infrequently seen in cases like this where it depends upon nothing, so far as can be discovered, except the gastro-intestinal derangement. This, associated with other cerebral symptoms,—irritability, restlessness, and sometimes convulsions,—has often led to the diagnosis of tubercular meningitis as a complication of gastro-intestinal disease.

Young infants with any active disease, pneumonia, scarlet fever, and especially with disease of the gastro-intestinal tract, are very likely to have cerebral symptoms, and these are often of the most perplexing character. Almost every single symptom belonging to meningitis may be present. It is always hazardous to make a diagnosis of a complicating meningitis in a baby where we have some other active disease present, no matter how prominent may be some of the cerebral symptoms.

I have seen many such mistakes made by other physicians, and have been guilty of not a few myself. But the autopsies tell the story.

One year ago, in the Infant Asylum, I watched for two months a wasting baby not unlike the one about which we are speaking, who had during the whole time the most persistent cervical opisthotonos. The anæmia was great, and the general symptoms indicated tuberculosis. We were continually upon the alert for other symptoms that might indicate tubercular meningitis, but they never came. The child died of general tuberculosis, and an examination of the brain and cord failed to reveal any explanation whatever for the persistence of this symptom. This case should certainly be classed with the one under discussion, in which the opisthotonos was a reflex symptom depending upon the gastro-intestinal derangement, in a child suffering from athrepsia.

In addition to the above-mentioned causes of cervical opisthotonos, it may be associated with symptoms classed commonly as "spastic paraplegia." The lesion being in some cases an extensive meningeal hemorrhage, in others thrombosis, and in many others unknown. Here we have increased knee-jerk, the rigidity of the extremities, delayed mental de-

velopment, and usually other symptoms of serious organic brain disease. Opisthotonos in these cases is not usually a constant but an intermittent symptom.

Cervical opisthotonos, existing by itself in older children than those we have had under discussion to-day, is much more significant. I have seen this more than once for several weeks as the only symptom of tubercular meningitis, in children already suffering from tuberculosis of the hip or spine. Such cases are usually seen in children between the ages of four and ten years.

In infancy, however, cervical opisthotonos is not an infrequent one, often depending upon slight causes, and when existing by itself, being of very little importance. Associated with other symptoms, as in the second case, it becomes important in locating the lesion, and in many cases giving us some clue to its character.

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## A CLINICAL LECTURE.

BY O. P. REX, M.D.,

Clinical Lecturer on Diseases of Children in Jefferson Medical College,  
Philadelphia, Pa.

CASE I.—It is a well-known clinical fact that in the milder form of epilepsy the bromides usually fail. In such cases the phosphide of zinc is of positive value, as is very happily shown in the case of the boy before you. He has been under observation and treatment here for over a year. When first seen the seizures were frequent, sometimes two occurring in one day. He was ordered one-tenth grain of phosphide of zinc three times a day, which was gradually increased to one-sixth grain. Under this treatment alone the seizures entirely ceased for six months, but returned when the medicine was temporarily suspended. Under continuous treatment again he has had no return for four months.

The case of a prominent business-man is equally instructive. In the midst of an active business career he found that his memory was failing rapidly, and no reason could be found to account for it, until he accidentally complained of occasionally seeing objects as if greatly reduced in size. His physician, Dr. Rex, recognizing this as one of the forms of visual epileptic aura, suspected that his patient was suffering from nocturnal epilepsy, which usually takes the milder form. Careful watching at night showed that such was the fact. He was treated with phosphide of zinc for thirteen months with

great benefit and entire relief; but after a period of three weeks without medicine, he had a seizure. He was immediately put back on treatment, which was persisted in for three years, and he now remains cured after a lapse of six years.

CASE II.—John K., aged five years, with good family history. He is brought here with a history of chronic constipation, from which he has suffered since birth. At first there would be regular evacuations for two or three days, and then there would be none for a like interval. Now he requires a cathartic about every two weeks, the condition being constipation alternating with diarrhoea.

In some cases of this alternating condition, the so-called "diarrhoea of constipation,"—the cause is an impaction of faeces in the rectum or even higher up, in the sigmoid flexure, which, by irritation and inflammation of the mucous membrane of the bowel, causes an increased and altered secretion of mucus, which passes off as a diarrhoeal discharge, while the cause still remains. In such a condition efforts to check the diarrhoea tend to increase the trouble by increasing constipation. In all constipations of children it is necessary to consider whether the condition is reflex or essential, and it is, therefore, an important duty to examine carefully every newborn infant with especial reference to the perfect development of the rectum. Constipation perpetuates constipation, and such infirmity in the adult can almost always be traced to causes operating from childhood. The remarkable case of an English officer is recorded, who suffered so extremely from constipation that, while in earlier manhood he was accustomed to have an evacuation of the bowels only once a month, in later years the interval was lengthened to six or eight months. The passage then would last over a period of three or four days, resulting in the discharge of many pounds of desiccated faeces. The autopsy revealed as the cause of his constipation simply a narrow fibrous ring around the inner lumen of the rectum, which could have been readily reached and removed by operation. Some years ago an inquiry among the physicians of London, asking for the best general remedy for constipation, elicited the answer, "Water at bedtime and on rising." A teaspoonful of table salt in water, at bedtime and on rising, is said to be infallible. Treatment of this condition must be systematic. The force of habit is well known. Establish a habit of soliciting a daily evacuation by going to stool at a regular time. Children at school are very apt to repress such calls if they come during school hours, and in this way natural impulses are easily blunted and weakened. Again, very valuable is massage of the abdomen, which acts principally by



strengthening the abdominal muscles. This may be given every night and morning, anointing the hand with a little olive or cod-liver oil. Also of great value are enemata. Whether these should be hot or cold is a disputed question. Some think that hot injections have a tendency to relax and weaken the tissues. Two ounces of soapsuds or of plain water with a half to one teaspoonful of salt is about the proper amount for a child of two years. Mothers frequently use as suppositories a small piece of molasses candy, or a small end of a wax lamp-lighter, or, in older children, a small piece of common brown soap, or castile soap, whittled into a conical shape.

This child suffers from intestinal catarrh, which is the result of improper food. He eats very freely of fruit, especially apples and bananas. To children there are only two ways of giving apple, which is a wholesome article of food: either scrape it to a fine pulp, or give it baked or as apple sauce. Bananas are digestible if properly masticated, but children will never take time to do this properly. Coffee is frequently responsible for intestinal disturbance in children. This child should be given one-half drachm of Fairchild's pepsin or one fluidrachm of wine of pepsin after each meal.

CASE III.—Michael D., a healthy boy of five years, is brought before you as a well-marked example of a stutterer.

It is important to have a clear distinction between stammering and stuttering. Alalia or aphasia is either the inability to remember words or the inability to originate the motor impulses for speech. The first is amnesic alalia, which is so frequently found after severe cerebral injury or disease; the second is ataxic alalia, which is a symptom of all general paralyses, most typically in bulbar paralysis, also in disseminated sclerosis and general paresis. With neither of these forms have we to deal here. Paralalia includes all abnormalities of speech, such as difficulty in pronouncing certain letters, hesitancy and irregular action of the organs of phonation, and defects depending on malformation. To this class belongs stammering, which is due to a lack of proper co-ordination in the action of the various organs concerned in phonation. There is always irregular action of the diaphragm. Whispering, which is an expiratory act, like coughing, increases the difficulty of a stammerer. On the other hand, stuttering or dyslalia is attended with marked spasm of the muscles of phonation and of the facial muscles. For a stutterer whispering frequently relieves the difficulty, because it requires much less effort to produce than the loud natural tones.

This boy cannot tell us his name. The face and throat muscles are violently convulsed, but if he is asked to whisper it, you see he can readily do so. The letters *r*, *l*, and *s* require a long expiration to produce them, and these are often imperfectly pronounced by a stammerer, but, if joined to a long vowel sound, they steady the spasmodic action of a stutterer's muscles, and are usually sounded with little difficulty. This boy has discovered that he can frequently get out a word by stamping his foot or clapping his hands, and he can sing quite well. Upon these facts depends the secret of his cure. Vocal drilling, rhythmic singsong enunciation, prolonged reading in a whisper, and such means of systematic training offer the only hope of success. And quite as important too is it to remove him from the danger of being ridiculed by companions, and to institute strict hygienic measures.

## A CASE OF CONGENITAL PERNICIOUS JAUNDICE.

BY CHARLES H. BUSHONG, M.D.,

Assistant Gynæcologist to Demilt Dispensary and Clinical Assistant in Gynecology at the New York Polyclinic, etc., of New York.

DR. MARCUS P. HATFIELD, of Chicago, read a paper before the American Pediatric Society, 1889,\* on "Two Fatal Cases of Biliary Cirrhosis (Congenital Pernicious Icterus)," etc.

The following case is probably one of the same disorder:

Mrs. H., aged twenty-six, was confined at 2.30 A.M., of October 31, 1889. The child was born before my arrival, consequently, the condition of the amniotic fluid is not known. Inquiry of the nurse failed to elicit anything on the subject, probably for the same reason that nothing abnormal about the child was noticed when first seen. The reason was that the skin was that peculiar shade of lemon yellow that looks white by gas-light.

I saw and examined Mrs. H. two days before, and found a normal presentation, with every indication of a normal labor, which indication was verified, the pains only lasting about two hours. The child, a male, was plump and well developed. The only thing noticed was a rather full appearance of the abdomen above the umbilicus.

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\* ARCHIVES OF PEDIATRICS, January, 1890.

The next day, when seen by daylight, a pronounced general jaundice was noticed. I had often seen new-born children have jaundice lasting for a few days, so thought little of it beyond remarking how very pronounced it was.

No change was noted, except perhaps a slight deepening of the icteric hue to the skin, until the fifth day, when "white movements" were reported. Meconium of normal amount and color had been passed at first.

I made a careful examination of the infant at this time, and found the cord still soft but quite shrivelled in appearance, very slight odor, and no evidence of separation at the umbilicus. The liver could be plainly felt, and both its lobes were much larger than normal. It seemed slightly harder than it should. The spleen could not be made out.

The child had nursed with vigor, and the mother's breasts had filled well, so it had abundant nourishment. There was no vomiting.

Calomel, one-sixtieth grain, in pulverized sugar was ordered to be placed on the tongue three times a day before nursing.

The next day the stools were somewhat darker, the skin being unchanged in color. I at this time began to hope for a favorable result.

On the evening of the seventh day I was suddenly called. On my arrival I learned that the cord had come off twelve hours before, and about noon there had been a "bleeding" from the umbilicus. This was so abundant that a physician on the next block was called, and had applied some tannin.

There was no bleeding when I saw the child, but it was very weak. The skin had the "chamois-skin" appearance spoken of by Dr. Hatfield, being loose and flabby, except over the prominent abdomen, which now seemed more marked by contrast with the shrunken limbs. The pulse was barely perceptible at the wrist, and the respirations were very shallow. Occasionally it made a weak cry when handled, but since birth it had been a good child.

The nurse and mother both said the flow from the umbilicus was not blood alone. They described it as blood and a clear yellow fluid. There was no evidence of pus either around the cord or in their description of the discharge.

The child died in about three hours from my last visit. No autopsy was allowed. This I regretted, as the diagnosis was uncertain. It seemed pretty well established as one of two conditions. It was either an impervious condition of the ductus communis choledochus, or, in the light of Dr. Hatfield's case, in which an autopsy was made, a biliary cirrhosis of the liver. From the description of symptoms and the



gross appearance, I am inclined to the latter as the true explanation of my case.

The parents are both free from syphilis. This was the third pregnancy. The first terminated normally, the child, a boy now living and in good health, is six years old. The second ended in abortion about the fourth month. The mother is small and frail with a tendency to tubercular trouble, and had a slight laceration of the cervix,\* for which she was treated by local applications till the fifth month of her last pregnancy. This child was born at full time.

355 WEST FOURTEENTH STREET.

## LECTURE AT THE NEW YORK POLYCLINIC, DECEMBER 18, 1889.

BY V. P. GIBNEY, M.D.,

Professor of Orthopædic Surgery.

GENTLEMEN OF THE CLASS,—It so happens to-day that I have a number of interesting cases of

### “POTT’S DISEASE OF THE SPINE,”

which I propose to utilize by way of some practical remarks. By the term “Pott’s disease” you understand ordinary spinal caries, “angular curvature” of the spine, or what I prefer to call tubercular osteitis of the vertebræ.

Etiologically speaking, the disease depends upon the presence of the bacillus of tuberculosis. The old question of traumatism I do not propose to consider at length. I am perfectly willing to admit that a child gets Pott’s disease from a fall or injury, yet I do not see of what practical value it is in a therapeutical way. If the soft parts were bruised, or the periosteum even, by the injury, we can trace directly the connection between the lesion and the fall. We can also trace the connection if we look upon the fall or concussion simply as a jar, which increases the blood-supply to the parts. These parts, however, we presuppose to be vulnerable. Or, better still, the trauma itself may act as a predisposing cause. There must, however, be in the circulation the bacilli. In

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\* Recorded as Case I., in my article in *New York Medical Record*, of January 18, 1890, on “Minor Lacerations of the Cervix.”

view of the demonstrations made during the past seven years by pathologists, I no longer hesitate to accept the tubercular origin of this disease. The question is often asked how the lesion can be started in this way. When one remembers the large extent of surface in the lungs exposed to the atmosphere, the mode of infection is very easily understood. Bacilli are most dangerous in dried sputum, for they can then readily circulate through the atmosphere, a child can breathe them, and the circulation is reached in this way. It is not necessary that tuberculosis of the lungs shall exist prior to the development of the disease in the vertebræ. The lung itself may not be the vulnerable organ; the diathesis which may have been inherited or acquired may not exist here. It must be remembered, too, that pulmonary disease of a tubercular nature is not so common in children as in young adults. Other modes of invasion are through wounds in the soft parts. The infectiousness, therefore, of tuberculosis is so well established now that the day is not far distant when police regulations will be called into requisition in order to check the progress of this scourge. The existence of bacilli in the foetal circulation or in the foetus itself, has not been demonstrated to the satisfaction of pathologists. This brings us, then, more directly to the question of prophylaxis. If a child born of a leprous mother, whose father is also leprous, can be removed at once at time of birth and thus be purified (a fact well established among the leprous colonies), we can certainly expect that children born of tuberculous parents can be saved from infection. If a child is allowed to nurse a mother thus affected, or a woman thus affected; if a child is allowed to breathe the atmosphere in a room where such infected people live, and which they in turn infect; if a child is allowed to travel in railway cars or other vehicles where the sputum from tuberculous patients has become dried and thus rendered dangerous, we certainly cannot expect for such children who inherit a vulnerability immunity from bone tuberculosis. The intestinal tract is likewise a site for the lodgement of bacilli; meat and milk may be infected. Still, this mode of infection is not very common, or, at least, investigations have not proven it common. I would have you remember in this connection that it is not necessary that joint-disease light up immediately on the infection of the body by the bacilli. A long time may elapse before virulence is established.

In this little boy, whose case is pretty well advanced, you see a deformity which we call a *bosse* presenting in the mid-dorsal region. The mother saw this for the first time not more than three weeks ago, and yet she tells us that

for nearly a year he has been complaining off and on, has cried at times when she would take him under the arms to lift him. She tells us also that his stooping has been very peculiar, that his gait has not been a natural one, that he complains at times of pain in the stomach. She does not know of any fall or injury that he has sustained. The case is interesting on account of the clinical history. It is curious to note how insidiously the disease may progress. We wonder sometimes how such deformity can escape a mother's observant eye, but such is the fact. The nature of the deformity suggests to us something of the pathology. The spinous processes of the lateral masses project so that we can locate this disease pretty accurately between the sixth and tenth dorsal vertebræ. The outline is taken by means of lead tape, and thus can be transferred to our note-book, showing us the height of the bosse. Before proceeding, however, to the clinical history, a number of cases being held in reservation for this, I propose to occupy your time for a few moments on the

*Pathology.*—The lesion begins in the bodies of the vertebræ as a small inflammatory focus, which process extends so that the body becomes soft, and under the weight of the body, and influenced by muscular action, breaks down, so that the bodies above and below approximate, sometimes coming quite together. The disease extends in this way to the other vertebræ, and gives us the characteristic deformity. The process itself is tubercular. Once begun, we have the means of infection. As destruction goes on, abscess forms, surrounding tissues are thickened for a while, and it sometimes happens that an abscess never comes to the surface. It may become encapsulated. The fluid contents may be resorbed, and what remains is a mass of bony and caseous detritus. A bright little fellow from Pennsylvania, a few years ago, had Pott's disease, and an abscess appeared which alarmed the father, and I made a visit to Cresson Springs. The mother was, at that time, under gynæcological treatment in this city. I explained to the father as best I could the nature of the abscess, and was very much amused a week later to find in the mother's hands a little letter which she had received. The letter read about as follows:

"DEAR MAMMA,—The Doctor says that what I have got is the chips and sawdust and shavings left over after my back was fixed."

The case which I now show you, a boy eight years of age, is one very similar to that of the little boy from Pennsylvania. Three years ago I discovered a tumor in the iliac fossa which



undoubtedly communicated with diseased lumbar vertebræ. He had flexion of the thigh with inability to extend. The joint-movements in every direction except extension were good. The sac was not opened in any way, but a plaster of Paris jacket was applied, and from time to time he has reported for a new jacket. One can with difficulty recognize any fulness in the iliac fossa to-day. The deformity of the thigh has long since been overcome by the subsidence of the acute symptoms.

Take this child, now just presented, two years and five months of age, whose mother says that the trouble came from a fall five or six months ago, just after she had weaned the baby. All that she knows about the case is this:

The child began to walk lame and draw the left thigh up. He kept about, crying at night occasionally, but going around all day, playing on the floor, not caring to stoop to pick anything up, but would ask her if he wanted anything. At times he has complained of pain in his stomach. For two weeks past, now, this has been the chief sign that has annoyed her. He is apparently well nourished, takes plenty of milk, she says. You see him stand before you with the head thrown back, spinal column in lordosis, left thigh flexed on pelvis, limb adducted a little, and he is barely able to touch the floor with the toes. If he walks, he walks like one in the third stage of hip-disease. Observe how he stoops to pick up this card from the floor. You see he bends only at the hips, holds the spinal column rigid, and makes quite an effort to get the object.

Before we proceed further, suppose we take the signs just given, take the history already obtained, imperfect as it is, and let some one suggest a diagnosis. A gentleman on the left suggests hip-disease, one on the right Pott's disease. The gentleman who suggests hip-disease gives as his reasons that the hip is deformed, the position of the limb, the pain he complains of, and the history of lameness extending over five months. The gentleman on the right gives as his reasons for believing it Pott's disease of the spine pain at every movement and pain in the stomach.

On further examination we find by taking the right hip, the one unaffected, that the thigh can be flexed to an acute angle, extended, abducted, and adducted without any resistance. With this as a means of comparison, take, now, the left hip. The thigh can be flexed to an acute angle, quite as far on this side as on the right. Abduction can be made quite easily without resistance or spasm of any kind. The same of adduction. Let me ask the gentleman who called this hip-

disease, whether such is consistent with his diagnosis. He replies, "No." I may add, furthermore, that if the child had hip-disease with this amount of deformity, and lasting this long, the extreme flexion, abduction, and adduction would not be present; it never is present. The limb seems well developed, too; there is no atrophy. If we extend the thigh, then resistance is encountered. The pelvis tilts and the spinal column arches forward. That you all can see. In reply to a question why this is so, a gentleman states that the psoas muscle must be involved. There might be spasm here. Further still, there might be an abscess. Suppose we investigate. As we look at the abdomen, there is no tumor. As we percuss the ilio-costal space, there is no dulness, but good resonance. We must rely therefore on palpation. Take the right, the unaffected side. I press my fingers well down into the iliac fossa as the child cries and takes deep inspirations. I sink my fingers farther down into the cavity, going down quite to the bottom, as you see. Let me take the left side. I encounter resistance at once, and as I press farther towards the umbilicus, I expose to you a distinct tumor, which any of you can examine and find to fluctuate. There is, therefore, a tense tumor filling the iliac fossa. We admit that this is a psoas abscess. Whence does it come? Laying the child on his face, now, there is found, as you will run your fingers along the spinous processes, a little fulness in the lumbar spine; and, as we take both limbs and attempt to move the spine from side to side, motion takes place only in the upper dorsal region, none in the lumbar. By hyperextension we do not cause this little fulness to disappear, and yet, as the child stands, one can scarcely appreciate any deformity. We have, therefore, practically, a non-deforming Pott's. I proceed at once to apply a plaster of Paris jacket with the child in hammock position. A gentleman asks, Why not evacuate the pus? In the first place, the abscess is not the most important feature of the disease. It is necessary to protect the spine, immobilize the column as well as possible, to prevent deformity, and to aid in resolution. In the second place, I do not care to excite any fear in the little child, or to lose its confidence. This is of minor consideration, but still is an important feature, especially as I believe that the abscess will take care of itself, that there is no crying need for evacuating it. The little boy you have just seen had an abscess exactly like this two years ago. He had a jacket applied; has worn the jacket since. The limb is straightened, the abscess diminished in size, and now it is difficult to detect any fulness whatever in this region. If, after further observation, the abscess gives any annoyance, I shall

aspirate ; but, for the present, the treatment is simply a solid plaster of Paris jacket, cod-liver oil, iron, and as much out-of-door exercise as it is possible for them to give him.

Take another child that I have the opportunity of presenting. The disease here is in the upper dorsal and cervical spine. There is a deformity of the head. It is thrown backward and to the right. The posterior muscles are in a state of spasm when you attempt to move the head. The sterno-cleido-mastoid muscle is not tense. This deformity differs from that of torticollis. This child walks with the head held stiffly, and the upper portion of the spinal column protected by all the muscles. If we attempt motion, we can find it in the lumbar region, but not in the upper portion of the spinal column. In this case I shall apply a head-spring, known as the jury mast, incorporated into a plaster of Paris jacket. The deformity is appreciable here. All can see it.

Still another case, in a boy thirteen or fourteen years of age, with a distinct bosse in the dorso-lumbar region, chiefly lumbar. On the side is a cold abscess overlapping the crest of the ilium. In this case the boy can jump without causing pain. He wears a convalescent brace. Let us aspirate the abscess. We find thickish pus coming through a large needle, but still the sac is not fully evacuated of this cheesy detritus already referred to.

Two or three more cases might be shown you ; they are in the waiting-room ; but they present signs similar to those you have seen. In all the deformity has been arrested. The treatment has been a solid plaster of Paris jacket for months, then a corset jacket.

*Treatment.*—I use at the clinic a solid plaster of Paris jacket for two or three reasons. One is because the patients are unable to purchase the steel braces. In the second place, because we cannot keep track of the apparatus as well at the clinic as I can at my office. In the third, the most important place, because I want you to see how to apply a plaster of Paris jacket, because I want you to learn how to treat a case. You are far away from instrument-makers and from large cities. It is simply impossible to treat a case satisfactorily with an instrument unless you can have full control of an instrument-maker and know just what you want, how the brace should fit, how to measure for it, and how to care for it. With a plaster, however, you can treat your patients no matter where you live, and as you have so few to treat, you cannot master the details of instrumental treatment. Just a few words about the jacket and I am done. You want good plaster. It is best to rely on the S. S. White Dental Manufacturing Com-



pany plaster, put up in six- and twelve-quart cans. The can holds quite enough for your use, you can obtain it easily, and the plaster is always reliable. Next you want good crinoline, sized with starch and not with glue. If it feels sticky, have all the sizing washed out before you attempt to use it, or you will be disappointed. Plaster does not set promptly in crinoline of this kind. Let your bandages be six yards long and from two to four inches wide, according to the size of the patient. Use no dinner pads, but protect all the salient points by felting or by lint, or by eider-down, which you can obtain at seventy-five cents a yard. Use warm water without salt or other material to make it set quickly. Let the patient be suspended, and let him assist in the suspension,—that is, employ self-suspension. Finally, have a good, seamless, skin-fitting shirt. You can get this of Lawson, 783 Broadway, by sending the bust, waist, and pelvic circumference, with the length. Aim to get the jacket applied smoothly, rubbing each layer well, and let the assistant point out the weak places as you apply the bandage, reinforcing here, and do not get the jacket too thick. One-eighth of an inch is thick enough for any jacket. In children it may possibly be even thinner than this. With the plaster above mentioned and the bandages, and the water without salt, you will find that the bandage hardens or sets almost by the time you are through applying it. Leave the patient in the swing a little longer, while you trim out under the arms and where the thigh is flexed on the pelvis. Then lay him on his side on a table and finish glossing the jacket. In ordinary cases this should remain in good condition for months. As a matter of fact, however, our jackets here have to be reapplied about once in six or eight weeks because of the rough usage they have. Do not yield to the wishes of the parents to have a plaster corset. Anything in the shape of a support you give must be under your own control. You should not ask the co-operation of the parents. During convalescence a corset may be made. This is made in the same way, only, while the patient is still suspended, with a sharp knife you can cut down in front through the plaster. Then with a pair of bandage scissors cut through the shirt, spring it off carefully, taking care to avoid interfering with the edges. As soon as it is ready, put it together, the edges in close apposition, let the assistant hold it so while you apply a roller bandage about the jacket, then trim out under the arms as much as is necessary. The jacket is now ready for baking. A bit of brown paper is put about it and it is laid on a kitchen range, usually on the perforated sheet-iron which is used for drying

plates. Leave it in for twenty-four hours, turning it once or twice during the time. On the following day you can apply it to the patient if you like, securing it in position by a good roller bandage. Then trim out where you find it necessary and remove. Have the end of the shirt turned up over the outside, stitch the edges along where the section was made in front, put over these some adhesive plaster or some canton flannel, and sew the shirt to the top. Have a shoemaker put shoe-hooks on a strip of saddle-leather and sew this in front. Your corset is then complete.

Let me urge upon you the importance of constitutional treatment. By that I mean anything that improves the nutrition. Give your tuberculous patient the same advantages you would give a patient suffering from lung tuberculosis.

## NEW YORK ACADEMY OF MEDICINE.

### SECTION IN PEDIATRICS.

January 9, 1890.

J. LEWIS SMITH, M.D., *chairman*; AUG. CAILLÉ, M.D.,  
*secretary*.

Presentation of cases.

#### CASE OF EMPYEMA.

Dr. Francis Huber presented a boy whom he first saw in July, 1887, when there was a deep-seated cellulitis of the left side of the neck. He was not given permission to open this sufficiently early, and in the mean time the boy had a convulsion with a temperature of 106° F. An incision into the tumor was then made, allowing a considerable quantity of dirty grumous purulent matter, admixed with air, to escape. A large drainage-tube was inserted, and the cavity washed out. The temperature persisted, dyspnœa continued, and three days later he detected a pleural effusion on the left side. An opening was made into the pleural cavity, and fluid injected here escaped through the opening above. The temperature still persisting, the upper wound was enlarged, so as to explore the anterior mediastinal space where a large abscess

was accidentally entered. The boy rallied well from the shock, passed through an attack of gastro-intestinal catarrh, was able to be about, but the opening above and below posteriorly remained. Eleven months later two ribs were resected, with the hope that the cavity would contract. The posterior wound healed within three weeks, but subsequently a large swelling reappeared superiorly, and when this was opened an abundance of very offensive pus escaped. A large sound was introduced from above and made to appear posteriorly, and a drain of iodoform gauze passed from one opening to the other, but the sinus still persisted, and two months ago a severe pneumonia of the left side developed, with the result of closure of the openings and entire disappearance of the sinus. The general condition was now very good, and, as stated, there was no discharge. The point of special interest was the existence of a sinus during two years, which refused to heal under resection of the ribs and various injections, but finally closed during an attack of pneumonia.

Dr. Abbe thought the explanation of the healing of the sinus during the pneumonia was the enforced decubitus and rest from solidification of the lung, and the reparative action in the sinus excited by inflammation in a neighboring organ.

#### TASTELESS PREPARATION OF IRON FOR INFANTS.

Dr. Henry Koplik exhibited a mannate of iron which contained fifty per cent. of iron, and consequently could be given in small doses. It dissolved perfectly in water, or in syrup, and had absolutely no taste, and was therefore very desirable for infants. It was made in Dresden by Dietrich, and sold by all druggists in New York.

#### DISCUSSION ON THE TREATMENT OF EMPYEMA IN CHILDREN.

Dr. Robert Abbe opened the discussion with remarks on the surgical treatment. Dr. Cabot, of Boston, had said that one-third of the effusions in the chest of children were either purulent or sero-purulent. It was important, however, to distinguish between cases which were serous in the beginning, afterwards became purulent, and which, when aspirated, showed a turbid fluid; and another, a graver class, running an acute course,—purulent from the first, which in fact were very much of the nature of a zymotic disorder, the suppurative pleurisy giving rise to systemic infection or being the result of systemic infection, as the case might be. As stated,



the latter class of cases of empyema were grave from the first, ran a rapid course, and proved fatal unless speedily relieved. The other class of cases were semi-purulent, ultimately giving rise to yellow pus, but not until after a considerable time. He said Dr. Loomis had asserted with some emphasis that the majority of children with empyema, if aspirated early, were cured thereby. But doubtless this remark was applicable only to the latter-named cases. An effusion into the knee-joint might be synovial, and afterwards become purulent, and be cured by aspiration. Or it might be cured by being let alone, the limited number of pus corpuscles being absorbed with the effusion. So, also, of the chest. But, on the other hand, there were other cases of knee-joint trouble which were suppurative from the first, the process being intense and destructive. These cases correspond to the other class spoken of with purulent effusion into the pleura. Here complete drainage of the pus-cavity was a *sine qua non* of recovery, at least of a satisfactory recovery. Undoubtedly there were some cases of this form of pleurisy in which the pus was left, became inspissated, and, in a sense, the patient recovered. But it was not proper surgical treatment to leave pus in the pleural cavity which could not be absorbed, there to become inspissated and cause trouble in some form.

Then, as to aspiration, no one who had aspirated a restless and alarmed child a number of times would feel disposed to continue the treatment. The operation had to be repeated perhaps twenty, thirty, or more times, and in one case it had been performed one hundred and twenty times. This was a great tax on the surgeon as well as on the patient, and it was fortunate that we had a more surgical procedure than aspiration when the fluid changed from a turbid character to that of a yellow or thick pus.

The method of incision and drainage was one which appealed to every surgeon of experience with these cases. It was an operation often somewhat formidable at first, but when it had been performed there was no necessity for repetitions. The change of dressings was a very simple procedure. But to observe strict antisepsis was not an easy matter. The use of the spray during the operation was a necessity, and antiseptic dressing must subsequently be used if one was going to claim that he had treated the case antiseptically. But the results of ordinary incision and drainage, without any claim to having observed absolute antisepsis, were so good that the method might be recommended for general adoption.

There was some advantage in a close dressing applied over the mouth of the short tube and opening in the chest. It

afforded a certain amount of advantage in the expansion of the lung by preventing suction of air.

The question of drainage by suction was also one which came up in the treatment of empyema. It was undoubtedly satisfactory if successfully kept up, but this was not easy to do in the ordinary treatment of cases. A rubber tube was put in through a large canula inserted between the ribs, a clamp was put on the extremity of the tube, the canula withdrawn, another canula was put on the tube next to the chest, the first one then removed, the end of the tube was put into a bottle of fluid, and the suction became complete on opening the clamp. But the success attending the ordinary method of incision and drainage, with the drainage-tube left open, was such that this method was likely to retain its popularity. The cases which were not phthisical or exhausted by other causes were likely to recover under ordinary drainage.

When drainage was not complete under this method of treatment, when the cavity was lined by extensive and thick cartilaginous adhesions, the lung fast up against the vertebræ, in such cases we often had to resort to other methods of filling the cavity between the lung and thorax, and the method of Eslander had proven everywhere satisfactory in three-quarters of such cases. It consisted in resecting a portion of the ribs and allowing the chest wall to fall in,—either the chest wall or skin. Usually where there had been failure it could be attributed to timidity, not making the operation sufficiently extensive.

This he believed to be a brief and just summary of the methods of treating empyema at the present time. If carried out thoroughly and skilfully they would generally prove successful. It was a difficult part of the anatomy to treat with strict antiseptic precautions, and we so commonly found poorly-treated cases do well that the general feeling of surgeons was that there need not be very great censure upon those who did not adopt strict antiseptic precautions. At the same time the statistics of the antiseptic treatment were so satisfactory that where it could be adopted, either by suction-drainage or strict listerian precautions, it was desirable to adopt such procedures where possible. But as for aspiration, it had been generally condemned by surgeons where the quality of the pus was such as to lead to general systemic infection, if it were retained.

Dr. Francis Huber thought that, with an experience derived from treating twoscore cases of empyema in tenement districts, he might be pardoned if he spoke somewhat dogmatically on this subject. Two were cases of double empyema; both recovered. Five were complicated with œdema of the

other side; in two exploratory puncture showed sero-purulent fluid, the entire quantity being drawn off slowly by means of the aspirator, but unfortunately both died within twenty-four hours of so-called acute oedema. Profiting by this experience he merely drew off from four to six ounces of fluid in the other cases and later operated. Three treated in this way recovered. In a number of others aspiration was first performed, but an incision was rendered necessary later by reaccumulation of the fluid.

If the fluid was thin and sero-purulent, aspiration might succeed in effecting a cure. This character of the fluid was, in his opinion, the chief explanation of cure by aspiration, yet the expansibility of the lung and yielding nature of the chest wall in young children contributed materially to the cure. If the pus became creamy and large masses of fibrin formed, aspiration would not succeed. He could not understand how these large masses of fibrinous material would disintegrate and dislodge. More radical measures would be necessary than aspiration in the vast majority of these cases. His practice was to make an incision at once. An incision an inch and a half or two inches long, one or two intercostal spaces below the angle of the scapula, with drainage, would answer in recent cases in children. By this method he had cured thirty out of thirty-five cases, including the two cases of double empyema, all in tenement houses. The usual time of treatment had been from two to three months. A drainage-tube a fourth of an inch in diameter was usually sufficient to drain the chest in children. In only one case did he find it necessary to resort to resection of a rib, it being one in which he had lost a drainage-tube in the pleural cavity. The dressings were changed every two to four days. He had not yet employed the spray, nor did he give an anæsthetic during the operation.

Dr. A. G. Gerster said that cases with large masses of fibrin and fibrinous lining of the inner surface of the cavity would not only baffle aspiration, but would also baffle incision if it were improperly done. He wished to call attention to one fact not mentioned particularly by the speakers, but which seemed to him of importance, namely, the locality of the incision. The selection of this place by the general practitioner was not always as judicious as it might be. The cases might recover, but not so soon as they would had the locality for the incision been selected which would best favor drainage by gravity. The place selected was very apt to be too far forward, if not too high. It should be behind the axillary line, and preferably between the eighth and ninth ribs,—the lowest point at which the diaphragm would not be injured. Supply-



ing the best possible conditions for drainage constituted the most important point in the treatment of these cases. While he was a firm believer in antiseptics, he did not think they constituted an important part of the treatment in these cases. Drainage was the chief thing. The fluid injected might be salt-water or simple boiled water. His rule was never to irrigate the cavity but once, and then thoroughly, not employing a poisonous antiseptic in the fluid. If it were a simple abscess cavity, not one lined with fibrinous deposits which had later to break down, the one irrigation would prove sufficient. Usually after the third or fourth dressing, or two or three days, he found the discharge had become serous. The principle of let well enough alone was a very important one in the treatment of these cases. He did not consider the spray necessary.

In the complicated cases, in which the lung had become shrunken and surrounded by a mantle of dense and resisting fibrinous tissue which prevented re-expansion, he had employed Eslander's method a number of times, in both children and adults, with good results, except in one instance, in which there was tubercular complaint. This operation, however, was a bloody one, and he had often found it necessary to improve the general condition of the patients which came under his care before resorting to it, the improved general condition was usually best brought about by effecting perfect drainage through an incision made where he had already pointed out. He had resected nine ribs in one case, the patient recovering. A Russian physician had suggested a method which seemed rational and deserving of trial. It consisted in dividing as many ribs as corresponded to the cavity to be obliterated, in two lines, one in the mammary line, the other in the scapular or axillary line according to the location of the cavity. When the ribs had been cut through—not removing the pieces—that portion of the chest wall could be pushed down upon the retracted lung and held there by suitable dressings. Dr. Gerster had recently performed this operation in one case, and found it much easier and less bloody than Eslander's.

Dr. W. P. Northrup said that three questions usually suggested themselves to his mind regarding the treatment of empyema when he made an autopsy in these cases, of which there were a good many in the foundling asylum. They were, where to operate, when to operate, and how to operate. Answering the second question, he said the autopsy seemed to make it clear to his mind that the operation should be done early before the thick false membrane had a chance to bind down the lung. As to where to operate, judging by the findings at

autopsy, it appeared to him that the incision should be somewhere in the axillary line, hardly before it, perhaps at its anterior margin, and in the sixth or seventh interspace. As to the form of operation, in young infants he removed three-quarters of an inch or an inch of one rib. An early operation, or perhaps early aspiration, perhaps followed by an opening, seemed imperative. As soon as the diagnosis of empyema had been made it was well to aspirate once or oftener, in order as soon as possible to give the lung a chance to expand. After that it seemed a free opening was indicated.

Regarding the form of dressing, he thought it should be arranged so as to have a valve-like action, permitting the exit of the fluids during inspiration and preventing the entrance of air during expiration. The importance of carrying out this principle was emphasized by some experiments which he had made on dogs. On cutting out a window in the thorax of the dog the lung became collapsed against the vertebral column, and when both sides were treated in this way the dog was in imminent danger of dying of asphyxia, but immediately recovered when a glass was placed over the windows in the thorax to prevent entrance of air and permit the lungs to expand during inspiration. Even a moderate valve-like action in the drainage-tube in empyema would be of assistance, and almost any dressing would act in this way to some extent.

Dr. Koplik thought the first question which one should ask himself before beginning the treatment of a case of empyema was, What was the cause? He believed that bacteriology would tell us when to simply aspirate and when to resect a rib. There were some cases of empyema in children which followed pneumonia, and here, doubtless, simple aspiration would usually effect a cure. He doubted whether we should speak of a sero-purulent effusion. If the fluid looked serous, it was only because the pus corpuscles had settled to the bottom of the cavity. Many of the cases of pleurisy following pneumonia got well without any operative treatment at all. In some the fluid went on to further accumulate, the lung became perforated, and recovery resulted in that way. But there were other cases which never got well without operative interference, but these could not be proved to be the result of pneumonia. In the class of cases following pneumonia the cocci were present commonly found in pneumonia and simple pleurisy. In the last-named class of cases other micrococci were present, making it evident that eventually one would have to operate. A third class of cases followed tuberculosis, and the prognosis was very bad, yet an operation gave the best chance of prolonging life. A fourth class of cases were found in septic

conditions, like septicæmia, puerperal fever, etc. Here, unless an operation was performed, death usually resulted.

It was bad policy to lump statistics. One should state that there were so many cases of empyema following pneumonia, so many recovered, so many died; so many cases of doubtful origin, so many operated upon, so many got well; so many cases of a tubercular nature, treatment, recoveries, deaths; and so of cases following septicæmia, puerperal fever, etc.

Dr. A. L. Loomis said he had listened to the discussion with a great deal of interest, but since it was almost altogether surgical he could hardly imagine why he had been invited to take part in it. As the last speaker had said, in suppurative pleurisies, as in all other diseases, it was important first to make a diagnosis. After making a diagnosis one might be able to give a prognosis, and could certainly treat the case intelligently. His experience with the treatment of empyema, or, as he preferred to say, suppurative pleurisy, extended over quite a period,—from before the introduction of aspiration, and at a time when the chest cavity was opened only in extreme cases. A large majority of cases commencing acutely, following pneumonia, recovered without operative interference. Later on he aspirated the patients, and thereby allayed symptoms and made them more comfortable, and they still recovered. Still later, in cases in which the purulent fluid accumulated rapidly and interfered with respiration, he saw the chest cavity opened in a number of cases, and they also recovered. Given, then, acute suppurative pleurisy, complicating pulmonary inflammations, the patients stood a good chance of recovery by aspiration, and he would not resort to opening the chest unless the case became prolonged, assuming a chronic character. If the purulent accumulation continued to return rapidly, after two or three aspirations, he thought one would certainly be justified in opening the chest. But regarding subacute suppurative pleurisies, complicating tuberculosis in children, it had been his experience that, whatever was done, the large majority terminated fatally. Aspiration gave only temporary relief, and opening the chest let out the purulent accumulation, but hastened the other pulmonary affection, so that the case terminated as quickly, if not more quickly, than when the chest was let alone.

But it was in chronic suppurative pleurisy where surgical measures seemed to him necessary. The method which he preferred was at first to make a free opening as low as possible and behind the axillary line, and establish free drainage. Resection in the majority of such cases was demanded, and unless it were performed there would be a long history of prolonged discharge, gradual wasting, waxy changes, and death.



Dr. Joseph E. Winters thought the points made by Dr. Gerster and Dr. Northrup were very valuable. He had not heard the entire discussion. When he first began treating these cases he relied almost entirely upon aspiration, and he found that now and then recovery took place after one, two, or more aspirations, but usually he was compelled afterwards to make a free incision, so that now, when he knew that there was pus in the pleural cavity, he proceeded at once to make a free opening. Cases which would recover with simple aspiration would recover much more quickly, he thought, with an incision. He chose the location pointed out by Dr. Gerster and Dr. Loomis, and determined the lowest point at which it was safe to operate by careful examination of the sound side. He introduced the aspirator needle, and if found pus, cut down along the needle before withdrawing it. Explore the cavity as far as possible with the finger, and aid the expulsion of fibrinous masses. Then carefully syringe out the pus cavity. Under this treatment nearly all cases not of tubercular nature would recover, and resection of rib would be unnecessary.

Dr. Gerster related, as emphasizing the importance of choosing the right place for aspiration or drainage, a case in which one of his young colleagues had recently aspirated in the fourth intercostal space, where there was dulness, and withdrew serous fluid, and on that fact based his diagnosis of pleurisy with simple effusion, notwithstanding the fact that the case had been going on for several weeks and the patient had become much emaciated. Dr. Gerster then aspirated low down and withdrew pus. The case showed that pus would separate into its component parts in the chest cavity just as it would in a jar, the serous portion remaining on top.

Dr. Loomis expressed the opinion that the point made by Dr. Northrup regarding the pressure effect of air entering the pleural cavity had not received sufficient attention. It was for that reason that in acute suppurative pleurisy he preferred aspiration to incision.

Dr. A. M. Phelps said that about ten years ago he published a paper on the treatment of empyema by valvular drainage, in which he described his form of drain, and expressed the belief that the treatment of empyema was purely a question of mechanics. The fact that the lung did not expand when the pleural cavity had been opened for drainage was due to pneumatic pressure,—pressure of the air entering the pleural cavity. This could be excluded and drainage be effected at the same time by means of a tube with a valve which permitted the exit of fluids during inspiration and prevented the en-

trance of air into the pleural cavity during expiration. He had brought the same idea forward in a discussion at the State Medical Society, and in some experiments at the Loomis laboratory, similar to those made by Dr. Northrup.

Dr. Abbe closed the discussion. He said the question of the influence of air-pressure within the pleural cavity was one of the first which arose in connection with drainage for empyema, and from the first it was attempted to make the incision in such a way as to form a more or less complete valve against the entrance of air. Stop-cocks and valves had been devised to accomplish the same purpose at different times, but they had found little favor in practical work, for it had been observed that nature herself usually devised a satisfactory way.

## Current Literature.

### I.—HYGIENE AND THERAPEUTICS.

Vaughan, V. C.: *Infantile Mortality, its Causation and its Restriction.* (*Journ. Am. Med. Assoc.*, 1890, xiv. 181.)

He concludes as follows: 1. One-fourth of the children born in the United States die before they reach the end of the fifth year of life. 2. Derangements of digestion cause more than fifty per cent. of these deaths. This class of diseases may be restricted by proper attention to the food. 3. Infectious diseases are serious in their effects upon infantile mortality. They may be restricted by isolating the sick, and disinfecting clothing and rooms. 4. About three-eighths of the total deaths from pneumonia occur among those under five years of age. Proper clothing and lessened exposure to extremes of temperature will do much to protect against this disease.

Wood, H. C.: *Notes on a Case Illustrating the Duration of the Contagion in Scarlet Fever.* (*Therapeutic Gazette*, 1889, xiii. 739.)

The first case ran the ordinary course of a mild attack of scarlet fever, and the children were kept apart till June 1,—i.e., forty-two days after the first attack. On June 15, two weeks after the meeting of the children in an isolated country house, a second child was seized with scarlatina. This second child had not been in the original house, the seat of infection,

since removal, but had slept with his brother the night of June 1. There had, also, been no intercourse between the family at home and the children between the dates mentioned. The clothes of the first child had all been destroyed, and there seems to be no possible explanation for the second child being attacked, excepting on the theory that the fever originated *de novo* in the country, at a place where there was no scarlet fever, or else that the first child imparted it to the second forty-two days after the commencement of the disease. It should also be stated that the first child had been repeatedly bathed during convalescence.

Wilson, J. C.: On the Treatment of Scarlet Fever by Chloral Hydrate. (*Med. News*, Phila., 1889, lv. 654.)

He advises the administration, from the outbreak of the attack of scarlet fever until defervescence, of small and frequently-repeated doses of chloral hydrate. To infants of two or three years, a dose of from one to two grains may be given, the dosage being gradually increased with older children; that for adolescents reaching five grains. The chief rôle of chloral is that of a sedative to the cerebral centres, but it is also useful on account of its antiseptic properties and its diuretic effect.

Putnam, J. W.: Abdominal Dropsy in a Young Subject. (*Buffalo Med. and Surg. Journ.*, 1887, xxix. 277.)

A boy, eleven months old, with acute general dropsy. The scalp, hands, arms, legs, and ankles all pitted on pressure. The abdomen was greatly distended with fluid. There was no history of previous ill-health. The bowels moved naturally every day. There was no suppression of urine. There had been no cutaneous trouble. Small powders of jalap and cream of tartar reduced the œdema of the extremities to a marked extent, but the ascites was undiminished. The abdomen was tapped, and one pint of straw-colored fluid was drawn off. The child made a complete recovery.

Greene, R. H.: The Treatment of Acute Gastro-Enteritis occurring among Infants and Children. (*N. Y. Med. Journ.*, 1889, l. 542.)

Knowing that the air from the open sea is almost a specific in this and diseases resembling it, he bases his treatment upon a careful analysis of nature's method. *First*, By insisting upon as thorough ventilation as possible, we can, to a certain extent, dilute the poisonous material present in the air. *Second*, The air of the sick-room can be cooled artificially by



the use of large pieces of ice; and by frequent sponging of the patient with cool water, and by its application with cloths to various parts of the body, we may reduce the fever. *Third*, We should be able to get the physiological effects of the sodium chloride, which is constantly present in the sea-air, by the addition of salt to the cold applications, and by giving small quantities internally in solution. *Fourth*, We must increase the oxidizing power of the atmosphere by the use of some substance which would assist in the more rapid oxidation of the various products of fermentation present. For this purpose, we may find a useful aid in peroxide of hydrogen, from the decomposition of which ozone is formed, or in some remedy chemically resembling it.

Marsh, J. P.: A Case of Ptomaine-Poisoning. (*N. Y. Med. Journ.*, 1889, l. 516.)

The patient was a delicate boy, five years of age. The onset was sudden, and marked by high fever, headache, and severe abdominal pain, accompanied with vomiting. Then delirium, diarrhoea, and black vomit appeared, and the countenance, position, and general condition were exactly like those of peritonitis. He died three days after the first visit. The *post-mortem* examination showed absolutely no evidence of peritonitis or of intestinal ulceration. There was a tight constriction of the circular fibres of the colon, and a peculiar translucency of the intestines, together with hepatic infarction, which constitutes, in the opinion of the writer, true pathological evidence of ptomaine-poisoning.

Hoadley, A. E.: A Rational Treatment for Diphtheria. (*Times and Register*, December 21, 1889, p. 800.)

He advocates the use of the following formula:

R Potassii chlorat.,  $\mathfrak{z}\text{i}$ ;  
Tr. myrrhæ,  $\mathfrak{z}\text{iii}$ ;  
Ac. carbolicæ, gtt. iv;  
Mel. despumat.,  $\mathfrak{z}\text{iv}$ ;  
Aquæ ad q.s.,  $\mathfrak{z}\text{iv}$ .

Ft. mistura.

Sig.—Fifteen drops every half-hour, day and night.

If the disease extends to the larynx or the nasal passages, this mixture should be used in an atomizer. In certain cases, he adds to the myrrh mixture bichloride of mercury 1 to 3000, and in malignant cases he gives maximum doses of iron. He also uses this mixture as a prophylactic.

Cammann, D. M.: Twenty-three Cases of Tyrotoxicon-Poisoning. (*N. Y. Med. Journ.*, 1889, l. 573.)

On March 14, 1889, seven children in a large institution in New York City were taken ill. In the following five days sixteen more became ill with the same symptoms. One of the children was four years old, two about six, and the others from seven to thirteen or fourteen. The cases varied in severity, but were all similar in character. The attacks came on quite suddenly. The symptoms were frontal headache, nausea and vomiting, diarrhoea, and high temperature. The children were ill for two or three days, and then recovered, with the exception of pallor, lasting for a variable time. Several, whose temperature was high, had four or five grains of the sulphate of quinine, but the others had no further treatment than rest.

Meigs and Scott: Experiments in Weighing before and after Feeding as a Means of determining the Amount of Food taken. (*Univers. Med. Mag.*, 1889, ii. 138.)

In sixteen experiments, the percentage of food ingested, apparent in weight gained, varied from eighty to one hundred and eight per cent. They think that one conclusion, at least, they are fully justified in announcing as established,—a method which, though it was only in one instance, gave only eighty per cent. of the food actually eaten, cannot be accepted as yielding any conclusive information with regard to the amount of food taken from the breast by infants.

Brothers, A.: The Treatment of Croup. (*N. Y. Med. Journ.*, 1890, li. 60.)

He advocates the use of large doses of bichloride of mercury, from one-eighth of a grain to a grain, to a child of two years in the twenty-four hours for days in succession. He gives the details of nineteen cases which were operated upon by O'Dwyer's intubation, of which eight, or forty-two per cent., recovered. Besides these cases, he has records of twelve cases which recovered without operation, and has probably seen twice as many more of which he kept no record.

Felkin: Foetal Malaria. (*Edinburg Medical Journal*, June, 1889.)

Two cases are reported, one of which occurred in South Africa, the other in Edinburgh. In both instances the mother was perfectly free from the disease. In the first case the paroxysms first occurred at the eighth month. On palpating the ab-

domen, the foetus was distinctly felt shaking. The same thing occurred at the same house on the two following nights. On the fourth night the paroxysm was again repeated, and was soon followed by the birth of the child. The child was normal in all respects except that the spleen was greatly enlarged. There were seven paroxysms after birth, with cold, hot, and dry stages distinctly marked. The highest temperature noted was 102° F. The father had suffered severely from both intermittent and remittent fever.

In the second case the mother complained of pain and "fluttering" in the abdomen on the evening of January 5. This was repeated at the same hour two days later, and was soon followed by labor. On the evening of January 8, there was a paroxysm of ague marked by shivering, fever, and perspiration, the highest temperature being 102.6° F. On the following evening the attack was renewed, but the child died during the cold stage.

Three healthy children had been born to the parents, when the father contracted malaria in Africa. The fourth soon "pined away and died," the fifth had an enlarged spleen, and the sixth was the patient. Neither father nor children showed any signs of syphilis.

The author is inclined to believe that it is possible for malaria to be produced in a foetus *in utero* by transmission, as in syphilis.

Rachford, B. K.: A Case of Diabetes Mellitus in a Child Five Years Old. (*N. Y. Med. Journ.*, 1889. l. 629.)

The child was five years and eleven months old when the symptoms of disease were first noticed. In April the child began to lose flesh, and three months later, she was seen for the first time by the attending physician. She continued to lose in weight and strength, and during the past few weeks had had an unusual appetite and thirst, and had passed very large quantities of urine. At the date of the first visit (July 25), the temperature was 99.75° F. and the pulse 112. She was not restless, and had no pain, but was quite weak and very much emaciated. The voracious appetite which had characterized her sickness had disappeared two days before, but the insatiable thirst continued. She was passing daily from six to seven quarts of colorless urine, with a specific gravity of 1.035, and containing a large percentage of sugar. The child was given fluid extract of ergot and placed upon a diabetic diet. July 28, temperature 98°, pulse 116; amount of urine, six quarts; child very weak and dull; no pain. July 29, at 10 A.M., died.



## II.—MEDICINE.

Sims, H. Marion: The Non-Retention of Urine in Young Girls and Women. (*Am. Journ. Obstet.*, 1889, xxii. 917.)

The author discusses under this head those cases of obstinate non-retention due to other causes than cystitis and growths in the bladder. He alludes especially to those cases in which there is a gradual contraction of the walls of the bladder, due to hypertrophy of the muscular coat; and the consequent reduction of its holding capacity to little or nothing. He gives short histories of several cases, and reports excellent results from forcible dilatation of the bladder with warm water. He used for this purpose a silver catheter, which was attached by means of a rubber tube to a Davidson's syringe. The washing was continued every day, each day getting into the bladder just a little more than the day before. He used force which was sometimes very painful. In one case, which was under treatment three months, the capacity of the bladder was increased from one and three-quarter ounces to eighteen ounces; and the patient made a good recovery. In connection with the dilatation, he sometimes had recourse to a mild faradic current, applied directly to the neck of the bladder by means of a Simpson sound connected with the battery.

Wood, H. C.: Night Terrors. (*Med. and Surg. Rep.*, Phila., 1889, lxi. 652.)

He said that night terrors are not rarely the precursors of epilepsy; therefore it is necessary to blunt as far as possible the sensibility of the patient. Stimulants must be avoided, study should be laid aside, farm life and all sorts of out-door athletic sports should be encouraged.

Barker, T. R.: Measles in the Second Week of Infancy. (*Times and Register*, Phila., November 16, 1889.)

The author reports a case in which, on the ninth day, the eruption had quite disappeared and desquamation was apparent, though slight. It made a good recovery.

Descroizilles: Treatment of Simple Acute Pneumonia in Children. (*Gaz. Méd.*, March 2, 1889.)

Some authorities insist that this disease requires no active treatment; that this only prolongs its duration, weakens the patient, and sometimes provokes disaster. To follow out such a plan would, in the author's judgment, be imprudent, though, as in all other diseases in children, therapeutic efforts should

be limited to that which is strictly necessary. Since pneumonia is an inflammatory disease, antiphlogistics should have a place in the plan of treatment, and among them withdrawal of blood is of the first importance. This should be done only in cases in which there is plethora, with full pulse, high temperature, headache, agitation, and dyspnoea. From one hundred to one hundred and fifty grammes of blood may be drawn at one sitting. Instead of bleeding by phlebotomy, two or three wet cups may be used, if it is deemed more advisable. Leeches are not considered useful for children. Hypodermic injections of morphine will be useful, unless the children object too vigorously to the pain of the puncture. With regard to revulsives vesicants are sometimes useless, but it is not believed that they have the inconveniences or the dangers which are sometimes attributed to them. They are most useful towards the end of the disease, when deferescence takes place slowly, and resolution is retarded. Antipyrin is preferred as an antipyretic when the fever is persistently high, and may be given in doses of sixty to seventy-five centigrammes. Not much enthusiasm is felt for the use of hot or cold baths. Antimonial emetics are believed to be valuable under certain conditions, but they should not be given to children under ten years of age, and they should be at once suspended when it seems evident that sufficient counter-stimulation has been obtained. In many cases the use of diffusible stimulants and diaphoretics will be indicated as soon as pneumonia is apparent. Among these are mentioned acetate of ammonia, coffee, brandy, rum, and rich wines. Dover's powder should also be given in doses of twenty-five centigrammes to one gramme daily. In those cases which, from the predominance of nervous symptoms are called cerebral pneumonias, musk, bromide of potassium, and laudanum are indicated. If delirium is the prominent symptom, ergot should be given in doses of fifty centigrammes to one gramme daily. This is recommended by Gassicourt, who also recommends chloral in doses of two to four grammes daily. In addition to medication, children with pneumonia should be nourished as bountifully as possible. After convalescence, a child should not be allowed to go out too soon. His sickness should usually keep him in bed ten or twelve days, and he should not go out before the beginning of the third week.

A. F. C.

Lewentaner: Action of Oil of Turpentine in Idiopathic Croup. (*Rev. Mens. des Mal. de l'Enf.*, April, 1889.)

Two cases of primary croup are narrated, in which oil of

turpentine, given by the mouth and used externally by inhalation, produced the best results.

The first case was that of a boy two years of age, who was attacked in May with a hoarse cough, followed by symptoms of stenosis of the larynx. The child grew worse from day to day, the attacks of dyspnoea becoming very severe, the cough aphonic, the face livid, and the pulse almost imperceptible. At this juncture a teaspoonful of turpentine by mouth was ordered, and compresses of ice around the neck. The following day there was very marked improvement, and, after taking a coffeespoonful of turpentine, the child expectorated a quantity of false membrane. The turpentine was then continued from the following formula :

	Grammes.
R Ess. terebinth.,	4.00 ;
Ol. amygdal. dulc.,	10. ;
Syr. simp.,	20. ;
Mucil. acac.,	40. ;
Ovi (yolk), No.	1 ;
Aq. canellæ,	50.

Sig.—A coffeespoonful every two hours.

The second case was a boy, four years of age, who had already suffered with croup eight days when first seen by the author. In this case, too, the attacks of dyspnoea were very severe, the cough hoarse ; there was frequent and complete aphonia, and intense disorder of the circulation. Turpentine was given to him in coffeespoonful doses, and the following mixture was constantly evaporated in the bed-chamber :

	Grammes.
R Ess. terebinth.,	4 ;
Tinct. eucalypti,	4 ;
Acidi carbol.,	4 ;
Alcohol,	300 ;
Aq. destil.,	1000.

After the first dose of turpentine, there were violent paroxysms of coughing, followed by abundant expectoration of false membrane. Within three days the child was in a very satisfactory condition.

A. F. C.

**Fournier : Method of Using Mercurial Inunctions and Opportunity for such Treatment in the Children of Syphilitic Parents.** (*Rev. Mens. des Mal. de l'Enf.*, March, 1889.)

For adults, four grammes is an average quantity of mercurial ointment, which may be rubbed in daily ; and this may be increased, after a few days, to six or eight grammes. In



children who have not reached the period of dentition, one or two grammes, or even more, may be readily tolerated. In severe cases in children the quantity used may be quite large, especially if used in conjunction with the sulphur waters. The best time to make the inunction is at bedtime, and but one inunction should be used daily. As to location for the inunction, Fournier prefers the surface under the axillary region. The scrotum, the groin, the axilla, and hairy regions in general should be avoided, as absorption takes place too readily in such localities. The location for the inunction should be changed from one side to the other every day, and each operation should continue as long as fifteen minutes. The part which has been treated should then be covered with a layer of cotton wool and rubber protective for six or eight hours, and the skin should be washed with soap and water the following morning. Two baths in starch-water should be taken each week, and the treatment generally continues four weeks. With some patients the treatment must be occasionally interrupted for a day or two at a time. A good plan is to continue the inunctions three days, and then discontinue them for a similar period. The treatment should be begun as soon as possible after birth if the diagnosis of syphilis is clear. In children who are born in apparent health, but with a suspicious history, if the father alone is syphilitic, this treatment is not indicated. If the mother had syphilis a long time previous to her pregnancy, but had no evidences of the disease during her pregnancy, treatment is also not indicated. If the mother has had syphilis recently, and especially if there were evidences of it during her pregnancy, energetic treatment of the infant should be begun as soon as possible after birth.

A. F. C.

**Hagenbach:** Nephritis in Connection with Acute Infectious Diseases. (*Rev. Mens. des Mal. de l'Enf.*, June, 1889.)

The symptomatology, course, and treatment of acute parenchymatous nephritis in connection with different infectious diseases are carefully detailed. It is in scarlatina that the renal changes are especially frequent, but it is necessary to differentiate from true scarlatinal nephritis, which does not usually occur until the third week of the disease, the form of albuminuria, which is often discoverable at the very beginning of scarlatina, and which appears to depend upon the febrile element. In four hundred and sixteen cases of scarlatinal nephritis, phenomena of uræmia were seen in twenty-seven. Scarlatina is frequently followed by irritability of the kidneys

and a predisposition to albuminuria. The disease rarely terminates in chronic nephritis. In diphtheria nephritis often appears between the fourth and sixth days of the disease, but its evolution is not usually accompanied by violent symptoms; exceptionally there is œdema or anasarca, and the proportion of albumen may undergo sudden changes. In measles nephritis plays an almost insignificant rôle on account of its infrequency and the benignity of its symptoms. Such is not always the case with varicella, for, according to recent observations, it is frequently accompanied with renal complications, which may even become fatal. Recently, nephritis has been demonstrated with aphthous stomatitis, with typhoid fever, with catarrhal angina, with epidemic parotitis, and with acute and chronic catarrh of the intestine. As to treatment, a milk diet is recommended, and non-nitrogenous food in general. As to diaphoretic treatment, one excellent means consists in the use of dry hot air. Among the diuretic agents, the most efficient are calomel and solutions of acetate of potash. If uræmia should occur, the benefit of chloroform anæsthesia will sometimes be found to be great.

A. F. C.

**Grognot: Etiological and Therapeutic Study of Diphtheria.** (*Rev. Mens. des Mal. de l'Enf.*, May, 1889.)

The plan, of treatment which the author has adopted is based upon the investigations of Roux and Yersin, and the conclusions resulting therefrom drawn by Simon. It consists in the destruction of the diphtheritic membrane by suitable local applications by the following means:

Applications of lemon-juice have long been found serviceable, and are still used.

Delthil's method of fumigation has been abandoned. The results from the use of lactic acid have not been encouraging.

In four cases applications of tannin and salicylic acid have been made with good results.

A spray of aseptol has been found serviceable where applications were inadmissible.

A medicated spray, used in accordance with the first method of Renou, has been found very satisfactory.

For internal use the perchloride of iron must always be esteemed. It may be administered in chloroform water, and is a powerful antiseptic.

Aseptol holds the first rank among means which are used for local destruction of diphtheritic membrane. It is made by combining one hundred parts of phenol with ninety of sulphuric acid. It has the antiseptic power of carbolic acid without its toxicity. Its germicidal properties are analogous



with those of thymol. Its action is somewhat caustic, but does not give pain, and it should be diluted with five parts of glycerin, alcohol, or water. It may be applied every two hours, and its effect will be assisted by the use of antiseptic sprays, which will overcome the dryness of the throat and assist in the removal of false membrane. Gargles and irrigations of the throat, in the intervals of the applications, with aseptol combined with chloroform water, will increase the efficacy of the applications. Applications, sprays, and irrigations form the tripod of local treatment. For removing the diphtheritic poison, which is elaborated by the bacilli, the intestines and kidneys must be acted upon. One may use the saline purgatives, cassia, senna, rhubarb, etc., for their combined tonic and dialytic effect, the cardiac diuretics, digitalis, sparteine, strophanthus, milk-white wine, and coffee, none of which are irritating to the kidneys, and the last three have analeptic properties. An abundant and tonic diet will be serviceable for diphtheritic poisoning as well as for any other. The prophylactic measures will consist in making the patient harmless to others in the place in which he is being cared for, and in effecting that the discharges from the patient do not form a new focus of danger.

Diphtheritic infection is most frequently produced, after desquamation of the epithelium, upon the bucco-pharyngeal mucous membrane under the influence of angina.

It may be that the bacillus, which Loeffler has found in the mouths of children exempt from diphtheria, is a frequent and harmless resident of the mouth and pharynx. Though deprived of violence and powerless when the mucous membrane is healthy, it may become developed if the mucous membrane is inflamed or deprived of its epithelial covering. It follows from the foregoing that it would be well to use antiseptic irrigations for the mouths of children in simple angina, and more particularly in the angina of measles or scarlatina. Such a practice, especially in hospitals, would perhaps diminish the great number of cases of diphtheria which occur in the midst of diphtheria or scarlatina.

A. F. C.

**Jacobi: Treatment of Tuberculosis in Children.** (*Rev. Mens. des Mal. de l'Enf.*, July, 1889.)

Arsenic is believed to be a very important medicament in the treatment of tuberculosis in children, but it should be given only in small doses. During the first years of life one may give every day, for a period continuing through weeks and months, two drops of Fowler's solution. This should be abundantly diluted, and given in divided doses after each



meal. With the arsenic may be combined tonics or excitants, or narcotics according to circumstances. After a while the treatment should be interrupted, especially if there be gastric or intestinal disturbance or localized œdema. If small doses of opium are given with the arsenic, the latter will be better tolerated. Almost as efficacious as arsenic is digitalis. Under its influence the contractility of the cardiac muscle will be increased, the arterial pressure will be augmented, and the frequency of the pulse diminished. Increase in arterial tension will be favorable to the renal function, improve the pulmonary circulation, and benefit the general nutrition. By improving the circulation of blood and lymph in the heart muscle, a beneficent action will be exercised upon the nutrition and development of the muscular fibres. For these reasons digitalis is indispensable in the phthisis which so frequently accompanies congenital or acquired insufficiency of the heart muscle. As to the preparation to be used, it frequently happens that neither the infusion nor the tincture can be tolerated by the stomach, digitalin is an inconstant preparation, and it may be necessary to limit one's treatment to the fluid extract. It may be given in pills or capsules, and with it may be combined the bitters, the narcotics, iron, etc. If a rapid action is required, strophanthus, sparteine, or caffeine may be substituted for digitalis.

A. F. C.

**Waxham, F. E.: Shawl-Pin in Right Bronchus Three Months: Successful Removal.** (*North American Practitioner.*)

The author reports the successful removal of a shawl-pin from the right bronchus of a boy eleven years of age. The boy while playing with a blow-gun dropped into it a shawl-pin with glass head, point first. As the pin became fastened, and as he was unsuccessful in getting it by other means, he placed the muzzle to his mouth and took a long, powerful inspiration. The pin was suddenly transferred from the barrel of the gun to his trachea. A paroxysm of coughing followed, which, however, soon subsided, and the episode was soon forgotten. Two months after the accident the boy had a dangerous attack of pneumonia, lasting two weeks, from which, however, he safely recovered. Two weeks later the writer was called to see the case, and advised an operation, being positive that the pin was present in the air-passages, although the most critical examination failed to reveal its presence. The history of the case and a somewhat frequent paroxysmal cough were the only indications of its presence.

Tracheotomy was performed, and a laryngeal sound passed

down into the right bronchus. Here it was discovered by the metallic click. Careful measurement indicated its presence in the right bronchus, five and a half inches from the opening in the trachea. A long pair of slender, slightly-curved forceps was then introduced into the trachea and passed gently down into the bronchus. The blades of the forceps were widely opened in passing down. When the location of the pin was reached they were closed, and fortunately it was grasped near the point, and removed on the first attempt without the least difficulty. The patient made a prompt recovery without a single unfavorable symptom.

**Heckstroem: Lobar Pneumonia in Children.** (*Rev. Mens. des Mal. de l'Enf.*, July, 1889.)

Thirty cases of lobar pneumonia in children have been analyzed by the author as the basis of his paper. The disease begins suddenly, but seldom was an initial chill observed in these cases. In nineteen of the thirty cases an upper lobe was involved, usually on the right side. The prognosis in such cases is usually as favorable as in cases in which the base is involved, there was no mortality in the series. The crisis usually comes between the fourth and tenth days, and rarely is there any relapse. The most frequent complication is pleurisy, and it may be on the side opposite to that which has the pneumonia. The urine is diminished, and in five cases there was no albumen, but acetone, acetic acid, and peptone were almost constantly present, none of them being indicative of serious conditions, as might be the case with adults. With diaceturia which occurred in some cases, there was a marked relation to certain nervous symptoms which were evident. The treatment in all the thirty cases was expectant. When the fever was high antipyrin and thallin were given. Dry cups were used to relieve local pain, and the cough was treated with urethan and antipyrin.

A. F. C.

**Paget: Occipital Meningocele.** (*Lancet*, November 9, 1889.)

Mr. Paget showed at a meeting of the Pathological Society a specimen of occipital meningocele, with cleft palate, and talipes calcaneus, from a seven months' infant, who died a few weeks after birth.

The meningocele was found to open by a narrow track into the left lateral ventricle, and was lined with a fine layer of brain tissue, not visible to the naked eye, but clearly seen under the microscope. The basal ganglia and the rest of the brain were natural.

## III.—SURGERY.

Parmenter, J.: Congenital Umbilical Hernia. (*Buffalo Med. and Surg. Journ.*, 1890, xxix. 361.)

Towards the end of the third month the cleft in the abdominal wall closes, the abdominal organs enter the abdomen, and there remains only an orifice through which the umbilical vessels pass. Not rarely a knuckle of intestine escapes the retraction of the viscera and remains outside, forming a tumor, covered with amniotic membrane. It thus differs essentially from other hernias, in that its contents are organs *which have never been within the abdominal cavity.*

It is quite probable that ligatures have included intestine, which has not been perceived, and symptoms of strangulation and death supervene. A faecal fistula may ensue. Obstetricians should examine carefully every cord before ligation. The prognosis is obviously bad, over fifty per cent. dying from this affection. Gangrene and peritonitis are the common cause of death. Sometimes it is due to hepatic hemorrhage or phlebitis of umbilical vein.

If possible, reduce the hernia and retain it in position with plaster. If irreducible, apply an antiseptic bandage until the cord separates. Expectant treatment has given excellent results. Herniotomy is applicable in only two classes of cases; first, in those in which strangulation has occurred; and, second, in those which are pear-shaped, with the small end towards the abdominal wall. These latter contain only intestine, and are very prone to strangulation.

Hirst: Septic Infection from Umbilicus. (*Times and Reg.*, Phila., 1890, p. 84.)

The child died eight weeks after birth of septic infection of its umbilical cord, which set up an endocarditis on the right side of the heart. He said that it was the duty of the obstetrician to treat the cord antiseptically. He advised that, after carefully cleaning the cord, it should be done up in salicylated cotton. This was the third case that had died during the past year in the hospital from septic infection through the cord.

Townsend, W. R.: Acute Arthritis of Infants. (*Am. Journ. Med. Sci.*, 1890, xcix. 1.)

He draws the following conclusions: 1. Acute arthritis of infants occurs most frequently during the first year of life. 2. It is pyæmic in character, an osteomyelitis of infant life, and is caused by one of the forms of staphylococci, most fre-



quently the staphylococci albus or aureus; may follow traumatism or the exanthemata. 3. The most frequent site of the infection is the epiphysis, near the joint, which in early life is frequently intracapsular. 4. The disease progresses rapidly, and nearly fifty per cent. of the cases have terminated fatally, the most frequent cause of death being exhaustion. 5. A more or less complete destruction of the "joint end" of the bone, pathological dislocations, flail-like joints, and loss of length of limb, rarely ankylosis, are the most common results of the disease. 6. Disease is most frequently met with in hip, knee, and shoulder. 7. As soon as the disease is recognized the pus should be evacuated promptly, the joint properly drained, and parts dressed antiseptically. 8. The treatment of resulting deformities should be conducted on general orthopædic principles.

Mitchell, S. Weir: Treatment of Pott's Paralysis by Suspension, etc. (*Am. Journ. Med. Sci.*, 1889, xcvi. 439.)

The writer's conclusions are that suspension should be used early in Pott's disease; that, used with care, it enables us slowly to lessen the curve; that in these cases there must be in some form a replacement of the crumbled tissues; that, unless there is great loss of power, the use of the spine-car or chair, etc., of John K. Mitchell, enables suspension, especially in children, to be combined with some exercises; that no case of Pott's paralysis ought to be considered desperate without its trial; that suspension has succeeded after failures of other accepted methods; that the pull probably acts more or less directly on the cord itself, and that the gain is not explicable merely by obvious effects on the angular bony curve; that the methods of extension to be used may be very various, only provided we get active extension; that the plan and the length of time of the extension must be made to conform to the needs, endurance, and sensation of the individual cases.

Boylan, J. E.: A Case of Intubation in Pseudo-Membranous Croup. (*Cincinnati Lancet Clinic*, 1889, lxii. 718.)

The details of a case which recovered are given. In the discussion, Dr. Fitzpatrick reported two fatal cases, and Dr. Stewart reported four cases, of which two recovered.

Silfverskiöld: Massage in Rickets. (*N. Y. Med. Rec.*, 1889, 36, 371.)

He begins with the lower extremities, using considerable pressure in a direction from below upward, and making energetic passive movements of the ankle-, knee-, and hip-joints.

He then passes to the abdomen, thorax, neck, and upper extremities, exciting increased respiratory movements by making pressure on the chest. Each *séance* lasts for from ten to fifteen minutes, and the treatment is continued through a period of from four to six weeks. At the beginning the patient usually complains of pain during the manipulations, but this soon passes away. The author claims to have obtained excellent results in a number of cases.

Farlow, J. W.: Intussusception in a Child Three Years of Age Successfully Treated by Rectal Injections. (*Boston Med. and Surg. Journ.*, 1889, cxxi. 486.)

The patient complained of pain near the umbilicus, which constantly increased in severity, and was paroxysmal. He passed a little blood and slime from time to time, but no fæces. To the left of the umbilicus a very marked fulness could be seen, the lower part of which was dull and rather firm, while the upper part was tympanitic. The intussusception was reduced by inverting the boy and injecting into his rectum, by means of a Davidson's syringe, one and a half pints of lukewarm water, at the same time trying to press back the tumor from the outside. He made a complete recovery.

Guyer, O.: O'Dwyer's Intubation in Zurich. (*Med. and Surg. Rep.*, 1889, lxi. 517.)

Dr. Guyer, house physician to the hospital for children, in Zurich, reports twenty-seven cases of diphtheria, in which O'Dwyer's intubation was performed on account of acute laryngeal obstruction, with thirteen (forty-eight per cent.) recoveries. In all of the cases the stenosis was so great that the only chance for saving the patient's life was in performing either tracheotomy or intubation of the larynx.

Ridlon, John: A Case of Congenital Dislocation of the Hip. (*N. Y. Med. Rec.*, 1889, 36, 537.)

The patient, a female, came under observation when she was ten and a half years old. The head of the femur was found displaced upward and forward, lying almost directly below the anterior iliac spine. Traction was made by means of the old pattern of the Taylor extension hip-splint. From this on for one year the child did not leave her bed, and no relaxation of the traction was once permitted. At the end of this time a jointed traction-splint was applied and the patient was allowed up. The difference between the length of the legs, as measured from the anterior superior iliac spine to the inner malleolus,

was reduced during this time (one year and a half) from two inches and a half to one-half inch. The author gives five photographs of the case and apparatus.

Harrington, F. B.: Intussusception and Rupture of the Intestine: Laparotomy and Death. (*Boston Med. and Surg. Journ.*, 1889, cxxi. 485.)

A male child, five months old, without antecedent constipation, was seized with sharp abdominal pain, which was shortly followed by a discharge of mucus and blood. On the following day there was vomiting, and several more discharges of blood appeared. On the fifth day, the abdomen was somewhat distended, there was frequent vomiting, and a mass could be felt distinctly, lying midway between the spine of the ilium and the umbilicus. Temperature was  $103.2^{\circ}$ ; the pulse was 150.

Rectal injections and kneading of the bowels having failed, the abdominal cavity was then opened and the intussusception was after some difficulty reduced. It was found to consist of the cæcum and the colon, the latter containing a longitudinal slit an inch and a half long. The appendix cæci, which was in a sloughing condition, was removed. In the small intestine, two inches above the cæcum, was found a tight constriction, which made it necessary to make an artificial anus above that point. The abdominal cavity was open for more than an hour. The child died one hour after being taken back to the ward.

Lovett and Goldthwait: The Abscesses of Hip-Disease: their Prevention and Treatment. (*Boston Med. and Surg. Journ.*, 1889, cxxi. 503.)

From the figures that have been presented, it seems fair to conclude that the preventive treatment of hip abscesses is an exceedingly important matter, and that by the confinement of the patient to bed when symptoms of deformity or joint tenderness arise, under efficient treatment the abscesses may be averted in a large proportion of all the cases. But when this smaller proportion of the abscesses has occurred in them, the mortality per cent. is exceedingly high, and the prognostic outlook very much more serious than in suppurating hip-disease in general. Operation does not seem to be attended with the risk of septæmia, nor does it prevent the occurrence of tubercular meningitis or amyloid degeneration; and, finally, it may be stated that thorough operation is followed, in a fair proportion of all cases, by the speedy closure of the abscesses, a closure which remains permanent.



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Original Communications.

THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.

BY A. JACOBI, M.D.,

Late President of the New York Academy of Medicine, Clinical Professor of the  
Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from May Number.)

VII.—DISEASES OF THE GENITO-URINARY ORGANS.

The preventive treatment of the *kidneys* ought to begin with the first hours of the newly-born. After the second day, and frequently through a period of some two or three weeks, the urine, usually thin and limpid in the infant, is liable to eliminate a large amount of uric acid and urates. They are deposited in the pyramids and papillæ of the kidneys in orange-colored crystals and amorphous powder, and are sometimes so copious as to accumulate in the pelvis of the organ and also in the bladder. Not infrequently are the cloths of the baby discolored by them. The presence of this "*uric acid infarctus*" is due to the sudden change in the circulation of the blood; it causes an unprecedented elimination of nitrogenous material which cannot be kept in solution, and thus removed, because the newly-born is not supplied with a sufficient amount of water. Its speedy removal is of great importance, for it

acts as a local irritant, and may give rise to a slight or larger renal hemorrhage, to albuminuria (which is a frequent occurrence because of the defective construction of the epithelium of the glomeruli), and even to nephritis. Besides, its presence in both the kidneys and the bladder is a ready cause of the formation of renal calculi; indeed, the vast majority of renal calculi and of the centres of vesical calculi consist of uric acid. The consideration of these facts conveys at once the conviction of the necessity of supplying the newly-born with ample quantities of water. Much suffering and illness can thus be prevented.

The *malformations of the kidneys* and its (mostly congenital) malignant *pseudoplasms* furnish but few indications for treatment. Abnormal shape and unicity of the kidney (sometimes amounting to horseshoe kidney), cystic degeneration of obstructed uriniferous tubes, carcinoma and sarcoma, are unfortunately not uncommon. Of the latter I collected nearly four dozen in my paper on the subject presented to the Eighth International Congress. No treatment can be advised but that of removal at a time when the growth of the tumor is not yet too large. Fortunately, the diagnosis can be made with satisfactory certainty, and besides, as a rule, there is but one kidney affected. Metastatic deposits in the other kidney take place, if at all, at a late period of the development of the pseudoplasma.

Echinococcus and hydronephrosis furnish the usual indications to the surgeon. More than one-half of the latter are congenital, and therefore unfavorable. The secondary variety is caused by congenital hypertrophy of the bladder, pseudoplasms, calculi obstructing a ureter, disease of the prostate gland and urethra and its neighborhood. Thus the prognosis of the causal treatment is very doubtful in most cases, and a direct surgical treatment—aspiration, drainage, and irritant injections—is demanded.

Most cases of *floating kidneys* in infants and children are congenital; in a few older children, of ten and twelve years, symptoms attributable to that anomaly originated in a fall or jump from a height. Fortunately, it is a rare occurrence, still I have met with at least eight in the course of thirty-six years.

I never could advise anything better than a snug and well-fitting abdominal bandage. I have not seen a case in which I felt justified in advising the removal of the organ.

Among the symptoms connected with actual or apparent renal disease there are two of such importance as to render a special consideration advisable,—viz., *hæmaturia* and *hæmoglobinuria*. The former is always the result of a rupture of blood-vessels which may be occasioned by many causes. Calculus in a kidney or the bladder, nephritis and cystitis, neoplasms, thrombosis of the renal vein, or an infectious disease, such as purpura and cerebro-spinal meningitis, are among the principal causes of hæmaturia. For the time being we are here dealing with that depending on renal hemorrhage only. The indications furnished by the presence of infectious diseases and thrombosis are clear, but the efficacy of the means considered appropriate is very doubtful. Stone in the kidneys requires flushing the organ with alkali according to the method to be soon discussed. The action of ergot, either as a fluid or the solid extract, may be tried. If the stomach be rebellious the remedy may be administered in the rectum. Heart stimulants are often indicated, but it must not be digitalis that is to be selected, because of its local effect on the kidneys. Strophanthus or sparteine are preferable. Astringents, such as are eliminated through the kidneys, lead, tannic and gallic acid, will render good service if given in more than the doses of the books. The application of ice over the bleeding kidney is superior to any other remedy, provided the patient be not too young; for very small infants do not bear the persistent use of ice.

*Nephritis*, in the acute, subacute, and chronic forms is a very frequent disease in infancy and childhood. As it is not always primary but quite often a secondary affection, it is liable to be overlooked until it is too late. When this excessive frequency will be generally recognized fatal results will become less, and prevention will be appreciated at its full value. The enumeration of the cases of nephritis will always be incomplete, but the list of those conditions and diseases leading to it comprehends the principal ailments of infancy and childhood. First of all, these are the acute in-



fectious diseases: Scarlatina, diphtheria, measles, rubella, varicella, malaria, typhoid and cerebro-spinal fevers, amygdalitis, parotitis, and pyæmia. There are constitutional disorders, such as syphilis, purpura, and diabetes, also extensive eczematous dermatitis, changes in the superficial circulation resulting from sudden exposure or the persistent influence of a low temperature. Besides, stasis and thrombosis, depending on pulmonary and cardiac diseases and diarrhœa, have the same result. Irritation of the kidneys by medicinal agents also leads up to nephritis; thus, for instance, chlorate of potassium, mineral acids, salicylic, carbolic, and pyrogallie acids, turpentine, naphthol, styrax, petroleum, tar,\* large doses of lead, phosphorus, arsenic, mercury, and manganese,—part of which are used for internal, part for external medication; finally, irritation of the organ by the uric acid infarctus of the newly-born, or by renal calculi, which are by no means rare in the very young, gives rise to inflammation. Most of these injurious substances exhibit their detrimental effect the more the younger the infants; in them a single external application of a solution of carbolic acid suffices to produce nephritis. The large number of causes of nephritis, as enumerated above, if heeded, teaches at least two lessons; first, that the supine expectancy in the treatment of infectious diseases is very liable to become criminal; and, secondly, that the effect of every irritating remedy, both internal and external, must be carefully watched.

When acute nephritis has been fully established, the first indication consists in the procuring of relief for the congestion of the kidneys. The child must be in bed, the skin warm; a warm bath will fill the cutaneous blood-vessels and relieve the internal circulation; dry cups and hot poultices applied to the renal region will have a similar effect. The mucous membrane of the intestinal tract must share in the

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\* Balsam of Peru has also been charged with occasioning nephritis. Bräutigam and Nowack, after having made daily examinations of the urines of twenty-two patients, though administering internally fifty-two and eight-tenths grammes in eleven days, and in another case eighty grammes in twenty-four days, found that it has no such detrimental effect, provided it be free of ethereal oils (*Centralbl. f. Klin. Med.*, No. 7, 1890.).

action of the skin; therefore, sulphate of magnesium must be administered in doses sufficient to produce three or four daily evacuations, or calomel in small doses frequently repeated for the purpose of obtaining the same result. The arterial tension must be reduced by nitrites, particularly when there are cerebral symptoms; besides aconite in frequent one-quarter-minim doses, small doses of opium frequently given, or chloral hydrate, may be tried for the same purpose. Digitalis must be avoided with the utmost care, but when exhaustion is threatening, strophanthus or sparteine sulphate may be administered alongside the nitro-glycerin. Iodide of potassium acts favorably in the same direction; the sulpho-ichthyolate of sodium has been recommended for the same purpose by Senator, who gives to an adult pills containing from one decigramme (gr. iss) to one gramme (gr. xv) daily.

The greatest care must be bestowed on the diet of the patient. Whatever is irritating must be avoided; for instance, alcohol, spice, or iron. The food must be exclusively liquid, and compatible with the vulnerable condition of the kidneys. As the first products of the metamorphosis of albuminates are eliminated through these organs, and some of those products, such as phenol, kreatin, and extractive materials in general, are positively poisonous, it follows that strongly nitrogenous foods—the opposite opinion of Oertel and Loewenmeyer and their followers notwithstanding—must be abhorred. No eggs must be taken, and as a rule no meat; now and then an exception may be made in favor of veal, spring lamb, chicken, fish, or oysters; but, as a rule, the diet in acute nephritis must be confined to milk and farinacea. Barley, wheat (stale bread), hominy, rice, and potatoes are permissible, also, green vegetables and fruit. The beverage consists of water or an alkaline mineral water. Lemonade is permissible unless it interfere with the digestion of milk. Neither in the acute nor subacute nor chronic form of nephritis must muscular exertion be allowed, for it is this that increases the metamorphosis of the albuminates. Moderate exercise, however, is not contraindicated in the chronic form; in the latter the elimination of albumin is not increased by exercise.

The surrounding air must be fairly warm when the patient is in bed, quite warm when he is about. The function of the skin must not be suppressed, a moderate amount of perspiration is beneficial. Thus it is that there is a constant indication for warm bathing and a warm climate, for both diminish the labor of the kidneys (as also of the lungs). As a moist air interferes with the action of the skin, a dry climate is preferable. Hot bathing must be avoided except in the occasional emergencies of uræmia.

*Subacute nephritis*, with its limpid and sometimes copious urine, changeable percentage of albumin, occasional œdema and gradual diminution of strength, occasional presence of arterial contraction, and of cerebral symptoms is often overlooked. It is a frequent sequela of scarlatina and diphtheria. Depletion, hot-air and hot-water baths, and iron, which gets deposited in the epithelium of the uriniferous tubes (which is thereby subjected to premature elimination), must be avoided in most instances. Digitalis is contraindicated during high arterial tension; indeed, there are but few cases which permit its administration. Small doses of opium benefit the circulation in most cases of uræmia complicated with high arterial pressure; so do the nitrites (nitroglycerin), chloral, and sparteine. Mercury in small doses (corrosive sublimate, gr.  $\frac{1}{16}$  to  $\frac{1}{10}$ , largely diluted, 1 : 6000, or 10,000 at least) may be given daily, week after week, and may be combined in afebrile cases with small doses of iron. The air must be warm, a dry warm climate selected, a warm bath given every day, with gentle friction. Large quantities of water, both pure and alkaline, must be shunned, for the functional activity of the kidney must be diminished as far as compatible with a normal circulation. This rule is particularly stringent during the presence of local or general dropsy. Here the amount of liquid consumed ought not to be greater than the quantity of urine discharged. Mild diaphoretics and purgatives will also relieve the labor of the kidneys. When the amount of uric acid in the urine is persistently so large as to point to the presence of a lithæmic disposition, salicylate of sodium may be administered daily, to the total (daily) amount of ten or fifteen grains.



*Chronic nephritis* is of frequent occurrence. The presence of occasional headaches, or vomiting, or a slow convalescence from any ailment, is suspicious, and calls for the examination of the urine. As albuminuria is not always present, and the amount of albumin very changeable, that examination must be repeated in short intervals. The absence of dropsy or œdema proves nothing at all, particularly in the very young infant, in whom chronic nephritis without dropsy is a frequent occurrence after pleurisy, pneumonia, erysipelas, or in syphilis. Indeed, the most dangerous cases are those in which no dropsical symptoms are apparent. Many a case of chronic nephritis could be prevented by the discovery of the acute or sub-acute stage preceding it, and by heeding its many causes. Of late I have seen a few cases complicating or rather depending on purpura, in which evidently the presence of small hemorrhages in the renal tissue gave rise to the initial irritation. In these cases the constant use of phosphorus (gr.  $\frac{1}{150}$  twice or three times daily) administered during two or three months in succession added greatly to the final recovery.

Now and then a case of chronic nephritis will recover. The majority of those I have seen getting well took corrosive sublimate. Children of five years may safely have one-fiftieth of a grain in half an ounce of water three or four times daily for many weeks in succession. When its intermission is deemed advisable, or together with the mercury, iodide of potassium may be given in doses of six or ten grains daily. At the same time iron may be administered, the chloride (or one of the milder preparations), from ten to twenty minims of the tincture daily. A gentle stimulation of the kidneys by preparations of juniper, or the bitartrate or citrate of potassium, is advisable. Strong irritation of the kidneys must be avoided; digitalis is apt to do harm, except in complications with valvular lesions of the heart. To increase diuresis through strengthening the action of the heart, sparteine or coffeine render better services; the latter, however, must be carefully avoided when there are any cerebral symptoms whatsoever. Among the best diuretics, through fortifying the heart while diminishing arterial tension, is nitroglycerin. To combat the latter condition, small doses of opium

are often useful. In cases of obstinate vomiting it is often the only reliable remedy.

Chronic nephritis is apt to call for immediate and strong measures during some of its worst sequelæ. Uræmia (occasioned by the accumulation of urea in the blood, the presence of cerebral œdema, of arterial contraction and heightened blood-pressure, and by reflex irritation of the motory centres) results in vomiting, diarrhœa, coma, and convulsions. Strong purgatives may be required at once (calomel, gr. v to x; elaterium, gr.  $\frac{1}{20}$ , or croton oil, gr.  $\frac{1}{20}$  to  $\frac{1}{10}$  every hour, to be followed by sulphate of magnesium), or strong diaphoretics (hot-air bath, hot-water bath, hot-water pack, pilocarpine, subcutaneously, in doses of from a fifteenth to an eighth of a grain), and occasionally when the symptoms of cerebral hyperæmia predominate, a few leeches to the septum narium (the preferable place), or the mastoid processes, will save a case from imminent destruction. When, however, much water is eliminated from the body through all these procedures, a new supply must be introduced either by the stomach or by the rectum. Injections into the subcutaneous tissue of large quantities of salt water, which have been advised for that purpose, I have not had an occasion to require or recommend. Other sequelæ or complications have each their own indications; œdema of the glottis cannot wait for the effect of the above medication, and demands either scarification or intubation. Hydropericardium and hydrothorax require paracentesis when the symptoms are urgent.

The frequency of *renal calculi* has been alluded to before. Indeed, they are quite common, have been observed to occur in the foetus, and give rise to many attacks of screaming-spells with dysuria, local pain, retraction of the testicles, to the occasional presence of pus, blood, and gravel in the urine, and to vomiting and convulsions. Most of them consist of uric acid (very few of oxalates, cystin, or the phosphate of ammonium and magnesium), and have their positive indications for treatment. Particularly in those cases which occur in gouty families, the diet has to be limited to but a moderate quantity of strongly nitrogenous food. Meat may be permitted once a day, white rather more than black. Celery, parsley, aspara-

gus, and all irritants must be avoided. The patients must be encouraged to drink much water, alkaline waters to be preferred. All of these contain more sodium than potassium; this latter having a greater affinity to uric acid, the bicarbonate of potassium, in daily quantities of from ten to twenty grains, may be given in Seltzer, Vichy, Bethesda, Poland, or Waukesha water; large amounts of which ought to be administered. The natural lithia waters contain less than the occasion calls for; the carbonate of lithia taken during a day ought to amount to from three to eight grains. Thus the artificial lithia waters, if carefully prepared, have the advantage over those furnished by nature.

The presence of a stone in the kidney, besides giving rise to the symptoms enumerated above, may produce renal catarrh, and secondary catarrh in the ureter and the bladder. When it leads to pyelitis or pyelonephritis, surgical interference is called for. When one of the kidneys is healthy, nephrotomy or nephrectomy may save life.

Of *cystitis*, infancy and childhood exhibits every possible form, from the catarrhal to the ulcerous or diphtheritic. It is more frequent than Ashby is willing to admit. Exposure to low temperatures, chilling of the parts by sitting on cold stones or the wet grass, trauma, vulvo-vaginitis, the administration of cantharides or other irritants, the drinking of beer, severe indigestion, typhoid fever, variola, or diphtheria, and the presence of stone in the bladder are just as many causes. Dysuria, retention or incontinence, vesical and rectal tenesmus, the presence of mucus, pus, and blood in the urine, fever, and secondary peritonitis or "typhoid" symptoms are among the possibilities. Trauma demands absolute rest in bed, and either cold or warm applications, besides opium, which may be administered internally or in suppositories; exposure ("cold"): warm bathing, diuretics and a narcotic; the cystitis of infectious fevers: rest in bed and tonics; that following the use of cantharides (administered internally or in vesicatories): from two to ten grains of camphor daily, internally; severe indigestion: the correction of the alimentary disturbances by abstinence, purgatives, and plenty of water; hyperacidity of the urine: the use of alkaline waters, hyperalkalin-



ity: that of hydrochloric acid; vesical calculus: its removal, preferably by the suprapubic operation. In most cases the patient ought to be kept in bed, to drink plenty of carbonated alkaline water, abstain from cold beverages, live mostly on milk and farinaceous food, keep his body warm, particularly abdomen and feet, take a dose of calomel, and an opiate for occasional relief. But by far the best symptomatic remedy in the spasmodic pain of cystitis is hyoscyamus; from two to four grains of the extract may be taken daily for an indefinite period. The chronic cases require the internal use of boracic acid or chlorate of potassium (from 15 to 30 grains daily, turpentine, gallic or tannic acid, uva ursi, and salol or salicylates; the latter if there be no nephritis at the same time. In a number of instances the local treatment of the bladder is indispensable; the bladder may be washed out with warm water, or a warm solution of boracic acid (two or three per cent.), or nitrate of silver (one-quarter or one-half of one per cent.). This procedure is best performed under chloroform.

Some of the symptoms met with in cystitis may occur without the presence of the latter. Painful *spasm* during micturition, *retention* of the urine, or *incontinence* are very frequent under the influence of quite a number of different conditions; it is upon the latter that the treatment depends. The urine may contain, besides a superabundance of uric acid, salts, or bile, or irritants of a nature which cannot always be determined accurately. Thus, urticaria of the surface, when resulting from ingesta, is quite often complicated with vesical spasm, so that it appears that the same cause acted simultaneously on the external and internal integuments. *Dysuria* may also depend upon a painful condition of the urethra, resulting from acidity of the urine or the transmission of a vulvovaginitis, or congenital contraction of the urethral orifice, or adhesion (mostly acquired) of the labia majora, which is easily corrected, or a balanitis resulting from the irritating effect of urine retained round the glans penis by phimosis. The indications for treatment in all of these cases are so plain that the enumeration of the etiological factors appears to be sufficient. There are besides cases of "*irritable bladder*," as well as in the adult, in which the result of the treatment gives

sometimes the explanation of the cause. In a few cases the introduction of a catheter was sufficient to relieve the spasm of the neck, in others the administration of hyoseyamus proved satisfactory.

*Retention* of urine by local atony and paralysis is rare in children, except by hyperextension during school hours; still, it may occur in the course of spinal diseases. Now and then there are mechanical obstacles. In the newly-born the colliculus seminalis is often quite large and requires the introduction of a sound. Large stones in the bladder, or a smaller one near the neck, or one impacted in the urethra, or a string tied round the penis and buried in the swollen tissue, or epithelial closure of the urethral orifice, or an œdematous prepuce are more or less amenable to a diagnosis and speedy amelioration. The injection of warm or cold water into the bladder, warm bathing or hip-bath, the correction of the epithelial adhesion of the prepuce, and the use of the catheter or sound find their ready indications. Retention during infectious or cerebral diseases requires great attention. Unconsciousness is a frequent cause, and frequent percussion of the bladder ought to be resorted to when the brain becomes insensible to the expansion of the organ.

Evidently the causes of retention are very numerous; one of the most puzzling cases was one in which the accumulation of urine was very great. The introduction of an elastic catheter, though it entered to its full length, availed nothing; a metal catheter entered with difficulty until it suddenly appeared to overcome a difficulty, and the urine was expelled with great force. The autopsy gave the explanation of the singular occurrence. The whole bladder was lined with a thick diphtheritic membrane, which was easily detached but did not admit the elastic catheter. This was deflected along the wall of the bladder, while the silver catheter succeeded in perforating the pseudo-membrane.

The great variety of the causes of *incontinence of urine* requires tact and discrimination in the selection of remedies. General anæmia and muscular debility indicate a diet carefully selected for its nutritiousness and digestibility. Gentle massage of the whole body, sponging with alcohol and water (1:6)

or with water, and efficient friction with thick towels, sea-bathing, and the use of medicinal roborants, such as iron or arsenious acid, will always prove beneficial. The elixir pepsini bismuthi et strychninæ of the National Formulary is a good preparation in insufficient gastric digestion, with atony of the stomach; a child of three years may take a teaspoonful three times a day.

Attention must be paid to the capacity of the bladder. In every case, particularly in the evening, the quantity of fluid must be restricted. The sigmoid flexure and the rectum must be empty in the night, and the patient should be encouraged to evacuate both bladder and rectum before retiring. After a few hours' sleep the children ought to be taken up and roused sufficiently for both purposes.

Muscular debility of the neck of the bladder (sphincter) requires general and local stimulation. Strychnine or other preparations of nux vomica prove effective to a certain extent by improving both the general innervation and the appetite; in desperate cases an occasional subcutaneous injection into the perineum (gr.  $\frac{1}{40}$  to  $\frac{1}{16}$ ) has rendered good service; an ointment of one part of extract of nux vomica in from ten to sixteen parts of fat, introduced into the rectum (size of a coffee or lima bean) several times daily, will also act well and can be continued for some time. The same indication is fulfilled by ergot, the fluid or the solid extract of which may be employed internally. The interrupted electrical current is perhaps the most powerful local stimulant; one of the electrodes must be applied to the perineum, the other to the hypogastrium or the lumbar region. The advice to apply the negative pole to the interior of the urethra or bladder and the positive somewhere externally is bad, because of the danger of urethritis and cystitis.

Whenever there is oxalic acid or sugar or an excess of urates and phosphates in the urine, the source of the disturbance must be attended to. The digestive disorders forming the source of the anomalous condition require a corresponding change in the diet (diminution of nitrogenous food) or correction of the functional disorders of the stomach and liver. Until that can be accomplished the prognosis is very uncertain. Vesical catarrh, nephritis, and the presence of a calculus in



either the kidney or the bladder have their own indications. The hyperæsthesia of the body of the bladder, complicated or not with catarrh,—it is often found without it,—requires belladonna or its alkaloid. Both belladonna and atropine are tolerated in much larger doses by children, in proportion to their size or age, than by adults. In many cases a single evening dose of extract of belladonna (gr.  $\frac{1}{4}$  to  $\frac{3}{4}$  to 1) or sulphate of atropine (gr.  $\frac{1}{100}$  to  $\frac{1}{75}$ ) answers well, sometimes to an unexpected degree. Bromide of potassium (gr. vi to xxv), camphor (gr. ii to v), extract. humuli fluidum (℥ iv to x), or the elixir humuli of the National Formulary in teaspoonful doses, given at bedtime, answer a similar purpose.

Causes of reflex contraction located in the vagina, penis, or rectum require local correction. Vaginal catarrh is as obstinate because of its inaccessibility as it is frequent. Polypoid excrescences about the vagina or in the urethra (of the female) must be removed; if there be phimosis, circumcision is required. But a great many cases which are presented for that purpose can easily be remedied by gentle dilatation of the prepuce. Firm adhesion of the prepuce requires careful detaching. Intestinal worms must be expelled, and the fact remembered that oxyuris has its original seat in the upper part of the colon and the lower part of the ileum, so that rectal injections have but a temporary effect in most cases. Fissure of the rectum, mostly of small size and located posteriorly, requires forcible dilatation, a procedure which demands little time and no anæsthetic, but is very efficient.

Irritability of the neck of the bladder and the prostatic part of the urethra has been treated by Henry Thompson with cauterization by means of a two-per-cent. solution of nitrate of silver. A solution of one part in a thousand of distilled water will be found sufficient, or a solution of one or two parts of tannin or alum in a hundred. Still, it is a better plan to introduce either an elastic catheter or a metal sound into the bladder, every few days, for two or four minutes. A few drops of a solution of cocaine instilled into and distributed in the urethra a few minutes before the insertion of the instrument will in many cases render general anæsthesia superfluous.

The latter, however, cannot always be dispensed with. In the case of a girl of three years, with chronic catarrh of the bladder and incontinence, anæsthesia was required a dozen times, for two purposes,—first, to inject a solution of nitrate of silver (1 : 1000) into the bladder, and, secondly, to dilate forcibly, with increasing amounts of water, the organ, which had habituated itself not to hold more than a few drachms of fluid at a time.

Masturbation, which is so frequently the cause of irritation of the prostatic portion and thereby of incontinence, has its own indications. Its cure is by no means easy. Infants can be watched and forcible prevention of self-abuse (mostly by the thighs or hands) exercised; but children of more advanced years require an unusual amount of firmness and supervision. Bodily punishment will avail but little; in the treatment of incontinence from whatsoever cause, nothing.

(To be continued.)

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## DISEASES OF THE MOUTH (NON-SURGICAL).

BY F. FORCHHEIMER, M.D.,

Professor of Physiology and Clinical Diseases of Children, Medical College of Ohio, Cincinnati, Ohio, etc.

(Continued from May Number.)

### VIII.—DENTITION.

No one remedy has been considered so much in the light of a specific against the maladies of teething as lancing the gums. More especially is this true among English-speaking people. Emanating, as we will see, from a celebrated French surgeon, it was taken up and diffused by the English, and in this way has come to us as an inheritance of more than doubtful value. While with us the scarification of the gums is by no means as commonly done to-day as formerly, yet there are very many excellent practitioners who still resort to this remedy both as a matter of routine and from conviction of its utility. The

names connected with the historical development of the subject of lancing the gums are principally three in number,—Ambroise Paré, John Hunter, and Marshall Hall. The first named has been neglected by most writers upon the subject (notable exceptions being Fleischman and Finlayson, although the latter's description is not correct), the second is universally referred to, and the third seems to get more credit for his amount of work than is due. The first mention of gum-lancing is found in the edition of 1579 of the works of Ambroise Paré, at the end of his book, "*De la Génération*" (numbered variously), and in all subsequent editions and translations. The statements made are the same as to facts, the language is changed in some of the subsequent editions (French edition of 1585, Guillemeau's Latin edition of 1582), but only as to minor details. Paré mentions the following remedies: "Rubbing the gums with oil of sweet almonds, fresh butter, honey, and sugar, or mucilage, from the seeds of puceron, marshmallow, quince, and on the outside a poultice of barley flour, milk, rose oil, and the yolks of eggs is to be applied: it is of advantage to rub the gums with the brains of a roasted or boiled hare, because experience demonstrates that the gums relax, and, owing to some occult properties, the teeth are helped in coming through; the brain of a dog is also good." Sometimes these and other remedies that he mentions are of no avail, "because the gum is too hard, which is the reason that the teeth cannot pierce them, from which follows, on account of the tension, that the children have great pains, from which follows fever and other complications mentioned above, even death. And therefore I am of the opinion that the surgeon should make an incision into the gum upon the tooth in order that the way is opened for it so that it can come out more easily. This is what I have done to my children in the presence of M. le Féuré, physician in ordinary to the king, and of Madame la princesse de la Roche-sur-Yon, and of Messieurs Hautin and Courtin, doctors regent of the faculty of medicine at Paris, and of Jacques Guillemeau, surgeon in ordinary to the king, and sworn at Paris." He then states that some nurses, as is frequently done nowadays, scratch through the gum with their nails "in order to make



way for the teeth that want to come through." Paré ends the chapter on generation by reciting the following history which taught him to lance gums. He was called to make a post-mortem upon the eight-months-old child of Monseigneur de Nevers; "having diligently searched for the cause of his death, nothing was found unless it might have been the hardened, enlarged, and swollen gums." When the gums were cut the teeth were found "ready to come through," and the conclusion was arrived at, by himself as well as by other physicians present, that "the sole cause of death was that nature was not strong enough to pierce the gums and push the teeth out."

Notwithstanding such high authority, the operation has never gained a great foothold in France, and the present status of the question can be shown by a quotation from Barthez and Rilliet: "Without denying the favorable results obtained by other practitioners, we must say that our personal opinion is not favorable to this method of treatment. We have frequently practised this small operation, but we cannot recall a single instance in which it seemed to have any real utility. We will add, in order to be consistent with truth, that to us it has never seemed sensible."

We must turn to England for the full development of the practice of lancing the gums, and we begin with John Hunter (*loc. cit.*, p. 609), who was the first to call attention to the reflex irritation produced by these foreign bodies, and, logical as he was, to carry out his treatment to the extreme, lancing freely and frequently.

To Marshall Hall (London *Lancet*, 1844, vol. i., p. 244) is usually attributed the credit of having brought the method into general use. While there can be no doubt of his having fortified the position, yet, from what is said by John Hunter, we are led to infer that in his day the practice was becoming pretty generally accepted. Marshall Hall did the operation because he wanted to relieve the "nervous action" by getting at the nerves themselves; therefore, "it is to the base of the gums, not to their apex merely, that the scarification should be applied. The most marked case in which I have observed the instant good effect of scarification was one in which *all the*

teeth had pierced the gums !” The gums should be lanced once or twice daily, if necessary ; “ better do this one hundred times unnecessarily than have one single fit from the neglect of so trifling an operation.” From this, as a starting-point, it will be seen how the process of gum-lancing has entered into the profession as simply a routine method of treatment, the indication for its use being about as follows : All the diseases of infants are due to teething ; all the bad effects of teething are removed by cutting the gums ; therefore all children ill at the time of teething ought to have their gums lanced. It is very difficult to give any adequate conception of the amount of gum-cutting that is still done in Great Britain. In a discussion held in the Medical Society of London, sixteen members took part, of which nine were decidedly in favor of lancing, three were opposed, and three non-committal. Nearly all of those in favor, however, had receded from the extreme views of Marshall Hall, and had, when they spoke of the subject, put for themselves certain indications, as, for instance, Mr. Hamilton Cartwright, who, although he thinks that convulsions and diarrhoea are due to teething, cuts the gums only when the gum is tense and glistening and the tooth about to come forward, and in inflammatory conditions of the gum, with tumefaction (*British Medical Journal*, November 8, 1884). This discussion gave rise to correspondence, in the same year of the journal, in which letters are printed from quite a number of practitioners in England, the result of which certainly seems to be that the operation under discussion is still used as a routine method by a very great, if not the greater, number of physicians in England. Certain it is that all the modern English books (West, Money, Semple, Day, Ashby and Wright) recommend lancing in a more or less limited way.

The operation has never extended into the medical acquisitions of the laity in Germany. The modern authors of Germany speak of gum-lancing as useless and, possibly, harmful, and the physicians do not carry gum-lancets in their pocket-cases. In our own country cutting of gums still has its disciples, and especially among dentists, although it is far from being an uncommon practice with physicians. Jacobi (*loc. cit.*)

says that "the local treatment of swollen gums, which consists of lancing, has fortunately become less common and popular than it was in former times." It may be taken for granted, however, I think, that the greater number of physicians no longer resort to the lancet as routine treatment. It may, furthermore, be stated that most of our authors advise lancing of the gums in exceptional cases only. One of the most recent and most enthusiastic advocates of the operation is Starr ("Diseases of the Digestive Organs," p. 102, 1886). "If there be fever, nervous irritation, sleeplessness, vomiting, or diarrhoea during the progress of and dependent upon dentition, I invariably lance the gum,—provided the position of the tooth can be established by the touch,—making the incision superficial or deep according to the distance of the tooth from the surface." This quotation presents the status of the question, as far as some practitioners are concerned, in a complete way. If certain things are present which, it is taken for granted, depend upon teething, then the gums must be lanced; a position almost as broad as that of Marshall Hall, who, however, had no ifs, and who was willing to say that these certain things were always dependent upon dentition. This position, however, is the exceptional one among American writers; in contrast with it see Dorning ("Keating's Cyclopædia"), who says that the good done by the operation in every instance, most likely, "was a pure coincidence or the result of the hemorrhage (a blood-letting) or of imagination on the part of those interested."

For the operation an instrumentarium quite formidable in size has been recommended,—a roughened coin, the lancet, the scalpel, and various instruments especially devised for the purpose. It will not be saying too much that, when the gums are to be cut, they should be operated upon *lege artis*, with all aseptic precautions. The methods that have been employed, again, are many. Some prefer superficial, some deep incisions; some cut at the top, others cut at the base of the tooth. The forms of the incisions are principally three in number,—the linear, the crucial, and the elliptical. To these may be added the elliptic incision with a dissecting off of the gum, the cutting across the margin of the gum, and, finally, Mar-



shall Hall's method, which consists in cutting the tissues as deeply as possible.

In the discussion of the subject the following questions can be asked: Does the operation do good, and how? Does the operation do harm, and how? In answering the first question we can subdivide as follows: The effect upon symptoms; the effect upon the process of teething when the operation is performed. There are three classes of authors,—he who believes in scarification unconditionally; he who does not believe in it at all; and, lastly, he who thinks it does good to allay some one symptom. Of the latter class, the symptom which is most commonly picked out as being relieved by gum-lancing is a convulsive seizure. It is claimed that gum-lancing cures convulsions. While we are not prepared to admit that convulsions are produced by teething upon theoretical grounds, we have been forced to admit that such a connection might be a possibility. How, then, can a convulsion which, upon theoretical grounds only, is produced by teething be relieved by gum-lancing? A relief given to the centres cannot be excluded provided the hemorrhage be sufficiently great. The same can be said for the local process with the same proviso. Blood-letting does relieve arterial pressure; convulsions produced by brain hyperæmia can be relieved by one or two leeches behind the ear. Indeed, the older physicians were in the habit of differentiating between convulsions due to meningitis and convulsions due to other causes by means of blood-letting. If the convulsions ceased, it was a bad omen; if they continued, the child might recover. Again, blood-letting empties ptomaines from the general circulation; if the convulsions are toxic, why should it not cure if the poison in the blood is reduced in quantity or taken out altogether? But no one would think of choosing the mouth as the place for a sanguinary depletion; so that this is not the reason ascribed for the beneficial effects of our operation. Locally the scarification does nothing except let blood. The idea that tension within the sac is relieved is a purely imaginative one. There is no tension within the sac, and, as has been shown, there is more than enough room for the tooth, so that under normal circumstances pressure within the sac or upon its bony sur-

roundings, in all directions, becomes an anatomical impossibility. Under abnormal conditions lancing of the gums has no effect upon the condition within the tooth-sac.

In more or less general terms it has been stated that irritation of the nerves is produced by the tooth.

The mucous membrane above the tooth has its nerves atrophied as the result of constant pressure; in other directions no nerves are pressed upon; how, then, can gum-lancing relieve a thing which does not exist? But most excellent observers state that convulsions are relieved by gum-lancing; observers whose word cannot be doubted. What has happened in these cases? Either the hemorrhage has been sufficient or the reasoning has been of the nature first *post hoc ergo propter hoc* or the convulsions would have stopped without any interference. As a matter of fact, gum-lancing neither prevents nor causes convulsions due to teething in all instances (see an excellent paper by Cairns, *Edinburgh Medical Journal*, 1869); in other words, when the conditions are not propitious the remedy has no effect. It is extremely easy to delude one's self concerning the efficacy of a remedy, especially when one is prejudiced in its favor. Convulsions in young children are a very uncertain quantity; depending, as they do, more upon central or systemic than upon local causes, they are apt to begin or cease upon very slight provocations. Who has not seen a convulsion cease as quickly as it came? It is within the experience of every one to have noticed the application of most simple means apparently cure convulsions. On the other hand, convulsions will be met with that cease only after extreme measures have been used, or, depending upon the cause, do not cease at all. It is safe to say that a great many convulsions cease after gum-lancing that would have ceased without any interference whatsoever. But the advocates of the lancet are not satisfied with this; "the operation worked like a charm;" "the effects were miraculous," and a great many more expressions of like nature are to be found in their writings. A great many forget to state that some remedy had been given before the gum was lanced, which had possibly removed the cause of the convulsion. A great many are so preoccupied with the good results that must follow that their impressions are obscured, and what would be

a sudden stoppage of the convulsions would to others be the natural course,—a gradual lessening until complete cessation has taken place. In my whole experience I have lanced the gums once, then at the earnest solicitation of a consultant; the result was *nil*, and in all other cases that I have seen in the practice of other practitioners the result was the same. Convulsions that can be cured by gum-lancing can be cured by the most simple means,—a luke-warm bath, a mild laxative, a full dose of bromide of potassium; but the principal factor must not be lost sight of,—viz., that they will get well of themselves if the physician will be wise enough to remove the cause, which, as has been stated before, must be looked for everywhere else than in the teeth. If he wish to do blood-letting, let him get a few leeches or the artificial leech, but let him not ascribe the benefits of a hemorrhage to gum-lancing. In this, it is not proposed to recommend blood-letting; this subject is foreign to the one under discussion.

As far as the effect upon a diarrhœa is concerned, it would be impossible to trace any connection between the gum-lancet and increased peristalsis. Here the relief that is given can be explained purely upon false reasoning. We would defy any practitioner to successfully treat an attack of cholera infantum or catarrh of the small intestine by neglecting the laws of diet and relying upon gum-lancing alone. In reading through the accounts given in relieving diarrhœa by scarification, it is always a little gray powder, a small dose of calomel, possibly bismuth, careful diet, plus the lancet. We never find the lancet used alone as the great specific; so that all deductions drawn in this way must be fallacious from a scientific stand-point. When the physician lances the gums, he immediately gives directions as to the other treatment; the child is now for the first time treated as being ill, by its surroundings, and the change of diet, the additional care, and the medicines produce the effects that are ascribed to the lancet. As long as a child is simply teething it is good to keep the bowels open, say the old women; the more you keep the bowels open the better; therefore the diarrhœa is salutary. Very few people take their children to the physician with diarrhœa, if the diarrhœa happen to occur about the time teeth ought to appear. It is only



after they see that the child is suffering in appearance and general health that they find it necessary to consult the physician, —frequently too late for him to do anything ; but after he has lanced the gums they go away perfectly contented, although the child does not improve, and, possibly, may lose its life. If the physician, on the other hand, gives the proper directions, with or without the lancet, the child is apt to recover. Certainly, in my own experience, with others, the lancet has never stopped a diarrhoea, and, I am equally certain that, with the proper remedial agents and without the lancet, failure has been comparatively rare.

That the operation makes teething easier or more rapid is a point that has been frequently urged. That teething is not facilitated is shown by all those statements that are made in regard to the number of times it is necessary to scarify. It is a very difficult matter to state which tooth is coming through, and more difficult to estimate the time when it will come through. More than once have I seen the wrong tooth lanced, and frequently teeth lanced that did not come through for months afterwards. How the eruption of teeth is made more rapid by scarification is difficult to conceive. The movement of the tooth is from below upward, or from above downward, as the tooth happens to be in the lower or upper jaw. If, now, we cut the gum we do not in any way facilitate this motion, for the gum does not offer any resistance when the tooth is ready to push through it ; certainly none that the moving tooth does not easily overcome, and the motion itself can certainly not be increased by the gum-lancing. We are practically digging a hole, expecting to remove the object at its bottom without raising it.

We have seen that lancing, *per se*, does no good. Does it do harm ? The operation itself may be harmful in that, first, it produces a wound where there should be none ; and, secondly, by hemorrhage. In these days of antisepsis we are loath to make wounds when they are not necessary, and, I dare say, a great many cases could be found in which infection of the scarified gum has taken place, producing much more damage than would have been done by the teeth. In an article by Behrend (*Journal f. Kinderkrankheiten*, iii. 6, 1844) we find a

case of this sort mentioned which occurred under the eyes of Marshall Hall. Behrend, who was in England at the time, makes a strong point of the unnecessary risk that children are exposed to from this cause. The cicatrix that is produced as the result of frequent gum-lancing has been spoken of as being another reason why the operation should not be performed. It does not seem, however, that a cicatrix produced in this way should offer very much resistance to the pushing tooth. On account of the comparative freshness and low vitality of this tissue the resistance might even be looked upon as less than that of the normal gum, although the latter is small enough.

The danger from hemorrhage has certainly been underestimated. Although the number of directly fatal cases is sufficiently great to warrant care in this direction, it is not only directly, but indirectly, that hemorrhage kills, as children will bear loss of blood much less than adults. In looking through the literature I have found ten fatal cases of hemorrhage, besides two others (Hamilton and B. W. Richardson) mentioned by James Finlayson (*Brit. Med. Journal*, September 19, 1874). Of these ten, five have been mentioned before by Finlayson,—they are those of Taynton, Anderson, Whitworth, Des Forges, and Nicol. The new ones that are added are those of Bonney (*Lancet*, 1854), A. C. Castle (*Boston Med. and Surg. Journal*, 1849), two cases of J. W. Garland (*ibid.*, 1878), and one case of Yale (*ibid.*, 1878). So that twelve cases have been recorded in which death was due directly to this operation. That there are a great many more that have not been recorded no one can doubt, for in all these years it is certain that more than twelve bleeders have been lanced, in each of which the hemorrhage would probably have been fatal. The greatest number of cases in which excessive hemorrhage does harm are not reported at all; we refer to those that produce acute anæmia (Behrend, Churchill, Barthez and Rilliet, Finlayson). These cannot be represented in tables or by statistics,—anæmia which produces other changes, which affects the digestion, the whole metabolism of the child, which causes the child to be less resistant to external noxious agents. All this should not be underestimated; and when authors speak of the harmless incision of the gums, an operation of no moment, we are willing

to agree with them as to the greatest majority of cases, but must insist on the direct harm that is done in a much greater number than is usually admitted. From our stand-point gum-lancing does good only as a local or general depletion, and as such it ought never to be used. Finally, there is another aspect of the question which has already been referred to. It is the harm that is done by preventing good. It is the error that is constantly inculcated, it is the making of a routine practice, based upon purely theoretical assumption, which is in the way of careful diagnosis and individual development. A man who has settled himself to the belief that teething produces all the ills of childhood rarely gets beyond this; if he, logically, lance gums, he can see nothing more in the therapy of nearly all diseases beyond this. Cairns (*loc. cit.*) says that gum-lancing "tends to perpetuate a custom which, to say the least of it, is of a doubtful character;" I would add, that which is useless. The conclusions that we would arrive at in regard to gum-lancing are as follows:

I. It is useless, *a*, as far as giving relief to symptoms; *b*, as far as facilitating or hastening teething.

II. It is useful only as blood-letting, and ought not to be used as such.

III. It is harmful, *a*, in producing local trouble; *b*, in producing general disturbance on account of hemorrhage; *c*, in having established a method which is too general to do specific good, and too specific for universal use.

IV. It is to be used only as a surgical procedure to give relief to surgical accidents.

(To be continued.)



## SOME POINTS IN THE DIETETIC MANAGEMENT OF SUMMER COMPLAINT.

BY B. K. RACHFORD, M.D.,

Demonstrator of Bacteriology in the Medical College of Ohio.

THE student of medicine who seeks to learn very much of value from our text-books of to-day on the dietetic management of summer complaint will certainly be disappointed, and he who is credulous enough to apply many of the dietetic suggestions found there will certainly come to grief in the treatment of many cases where a correct conception of the etiology of this disease and a knowledge of the physiological properties of the various food-stuffs would have enabled him to have conducted the disease to a favorable termination.

We cannot in summer complaint, as we can in Bright's disease, diabetes, and typhoid fever, prescribe a dietary which can safely serve as a rule of practice to physicians who follow the advice of others and never ask why. This is because summer complaint is a general term embracing quite a number of diseases of which our present knowledge does not permit of scientific etiological classification. The various forms of summer complaint vary so widely in their pathology, and consequently their dietetic management, that we may almost say that every case is a law only unto itself; and is to be fed upon physiological principles according to our conception of the pathological process underlying the disease. In order that we may do this intelligently, it is necessary that we should in the first place have a clear conception of the etiology of these diseases, and this, I think, is embraced in the following proposition. The chief, if not the only, direct causes of summer complaint are abnormal intestinal fermentations, and these fermentations are chiefly of two kinds, acid and putrid, the former occurring in carbohydrates, the latter in albuminoids.

This proposition certainly very much simplifies the theoretical dietetic management of summer complaint. It is plain

from this that in any case we should endeavor to determine whether an acid or a putrid fermentation is causing the disease; and having settled this point, we should give a food which cannot undergo the same change. In acid fermentation an albumen is indicated; in putrid fermentation, a carbohydrate.

Escherich depends on the acidity or alkalinity of the stools to guide him in determining the nature of the intestinal fermentation, while Christopher relies on the odor of the stool in making the diagnosis. The sour stool means an intestinal fermentation of carbohydrates, and indicates an albuminous diet. The putrid stool means an albuminous fermentation, and indicates carbohydrates.

It must be admitted that this rule of practice, which is theoretically so charming in its simplicity, is, to a certain extent, disappointing in the every-day practice of medicine.

But the fact that we are not able to successfully feed all cases of summer complaint according to this simple rule of practice, does not prove that the proposition upon which it is founded does not embrace the true etiology of these diseases, but rather that the sour and putrid stools do not always furnish reliable evidence as to the nature of the fermentation causing the trouble. One cause of failure in the application of this rule is that the food-stuffs in the intestinal canal are frequently supporting both forms of fermentation at the same time. In one part we may have an acid, in another a putrid fermentation. Another cause of failure—and one that is especially active in chronic cases—is that the intestinal mucus may keep alive the abnormal albuminous fermentation, although the child be fed exclusively on carbohydrates. In cases of this kind the stools may, as they sometimes do in acute cases, vary in character, one being putrid, another acid. But, notwithstanding these possible elements of error, it must certainly be admitted that *continued* acid or putrid stools are, to say the least, valuable evidence as to the character of the fermentation causing the disease, and that they are valuable in indicating the proper food just to the extent that they are valuable in diagnosis. But we need not depend exclusively on the odor or reaction of the stools in selecting a diet, for fortunately we have in other

symptoms quite as important testimony to the character of the fermentation as we have in the stools. In this connection I wish to refer to a classification of summer complaint which I made in March, 1888,\* and which I discussed quite fully in the *Medical News*, September 1, 1888.

In this classification I named three forms of summer complaint, only two of which are important from a dietetic standpoint. These two great clinical classes embrace all the serious forms of this disease, and the characteristic symptoms which distinguish these classes are very important in indicating the proper diet.

The first and by far the most important class, embracing as it does all the rapidly fatal cases, is caused by the formation in the intestinal canal of physiological poisons (ptomaines) from the fermentation of albuminous material. This class is characterized clinically by the presence of marked constitutional symptoms, such as fever, stupor, nervousness, and convulsions, and frequently the stools contain mucus and blood. Constant nausea, which is not relieved by vomiting, is also a common symptom. They vary in severity, according to the poisonous properties of the ptomaine produced and the amount of it absorbed, from a slight fever, which is relieved by expelling the offending mass, to the rapidly fatal cases of so-called cholera infantum.

Here we have indicated a simple and valuable rule of action in selecting a diet.

Since constitutional symptoms are produced by physiological poisons (ptomaines), which can be formed only by the fermentation of albuminous material, it follows that we should *avoid albuminous food when there are marked constitutional symptoms present*. And since the most dangerous forms of summer complaint are due to albuminous fermentations, it follows that we should *avoid albuminous food when in doubt as to the character of the fermentation causing the disease*. The value of these rules of action depends on the fact that, if we give any other than albuminous food where it is not indicated, we may aggravate the disease but do not cause serious symptoms.

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\* See *Medical News*, March 10, 1888.



But, on the other hand, if we give an albumen where it is not indicated, we may produce dangerous or even fatal symptoms.

It is quite evident that a theoretical cause of error in the application of the above rules may be pointed out by those who believe that fever and other constitutional symptoms are not always evidence of the action of physiological poisons, but may sometimes be due to reflex causes. Even if this objection is a valid one, it is purely theoretical, and does not at all interfere with the practical application of the above rules, since reflex irritation from mechanical causes in the intestinal canal would not be increased by avoiding albuminous food.

In this connection let me emphasize a fact which will be made more evident farther on. When albuminous food is contraindicated it does not always follow that a carbohydrate should be given, and it should also be remembered that while one form of albuminous food, such as caseine, may cause serious symptoms, another form, such as white of egg or meat juice, may thoroughly agree. This is especially true in chronic cases.

The second great class of summer complaint is important rather in the number than in the severity of the cases which it embraces, and is caused by the presence in the intestinal canal of local chemical or mechanical irritants. These irritants are produced, as a rule, by the fermentation of carbohydrates. The chief clinical characteristics of this class are flatus,\* pain, urticaria, and the absence of marked constitutional symptoms. Here we have indicated another simple rule of action to aid us in selecting a diet,—viz., *avoid carbohydrates when there are no marked constitutional symptoms and the disease is characterized by flatus, pain, or urticaria.* Here again let me emphasize the fact that, when carbohydrates are to be avoided, it does not necessarily follow that albumens are indicated. This is plainly evident if we but remember that every albuminous fermentation does not produce poisonous ptomaines, and that cases having no constitutional symptoms and closely resembling the above class may therefore result from an albu-

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\* See Dr. Christopher's paper, *New York Medical Journal*, November 9, 1889.

minous fermentation; but it must also be remembered, lest we be timid in the application of the above rule, that in these cases an albumen, even if not indicated, can do no serious harm; at most, it can only temporarily aggravate the symptoms, since the character of the fermentation is not such that poisonous ptomaines will be formed even though it be fed by albumens.

It may be well to state here that in the class of cases not having marked constitutional symptoms, it is not always necessary to prescribe a special diet, since they are frequently cured by intestinal antiseptics, opium, and other medication, even though a diet of breast and sterilized milk be continued. In such cases it is important, if not necessary, that the milk be given greatly diluted and in small quantities, so that only the smallest possible amount of its albumen and sugar shall reach the seat of the disease in the intestinal canal; but if they do not speedily yield to such treatment, we should stop the milk and be guided by the above rules of practice in selecting a diet.

It is quite evident that a knowledge of the physiological properties of various food-stuffs is necessary to the successful management of summer complaint. We have foods which practically are pure albumens and others which are pure carbohydrates, and the indications and contraindications for these foods have been clearly pointed out in the above rules. But we have another class of foods which are of inestimable value in the early treatment of the most severe forms of summer complaint. These foods, such as the meat broths and whiskey, contain so little albumen or carbohydrates that they are not contraindicated in either form of the disease. We are safe, therefore, in beginning the treatment of every case with these foods, which may be continued from twelve to twenty-four hours, or till the digestive organs have recovered sufficiently to digest the character of food indicated.

From what has been said we may formulate the following rules, which, I think, will aid us very much in selecting a diet in summer complaint, when it becomes advisable, as it usually does, to temporarily discontinue milk.

1st. Avoid albuminous food (*a*) when marked constitutional symptoms are present; (*b*) when in doubt as to the

character of the fermentation causing the disease ; (c) when the stools are putrid ; (d) when the stools contain mucus and blood ; (e) when the nausea is constant and not relieved by vomiting.

2d. Avoid carbohydrates as a food (a) when there are no marked constitutional symptoms present and the stools are continuously acid ; (b) when there is much flatus, pain, or urticaria.

3d. When the albumens are to be avoided the carbohydrates are, as a rule, indicated ; and when the carbohydrates are to be avoided, the albumens are, as a rule, indicated.

4th. Give foods such as cream, beef broths, and whiskey (a) when the foods prescribed according to the above rules disagree ; (b) during the first twenty-four hours in severe acute cases ; (c) when in doubt as to the character of the food indicated.

It is not claimed that the above rules of action are infallible, or that one can blindly follow them and obtain uniformly good results ; but it is claimed that these rules are founded on sound principles, and that, in the present state of our knowledge, they furnish our most rational and reliable guides in the selection of a diet in summer complaint.

Before going further, let me state with emphasis that the foods which are of value in the dietetic management of healthy infants are of very little value in the dietetic management of summer complaint, and *vice versa*. In fact, milk, which should be the exclusive food of the healthy infant, is contraindicated in almost all forms of serious summer complaint, and is absolutely dangerous in some forms. It is, therefore, one of the first principles of treatment to stop all milk food for a period varying from twenty-four hours to a week, or longer, as the symptoms may direct. After this period, in the milder cases, the milk may be resumed, but the milk must be given greatly diluted and in small quantities, so that its albumen and sugar may be digested and absorbed before reaching the seat of the disease in the small intestine ; for it seems quite self-evident, if the disease be caused by an abnormal fermentation, that milk in any quantity reaching the fermenting mass would certainly feed the fermentation, and therefore aggravate the symptoms. In September, 1888, I called attention to the fact



that sterilized \* milk, whether it come from the mother's breast or the steam sterilizer, would only increase, and could in no way control, any abnormal intestinal fermentation. The second preliminary to the successful management of these cases is a cathartic, and preferably one which is also an antiseptic, such as calomel.

Having given a cathartic, and stopped milk and all other foods, except such as we may direct, we are now ready to prescribe a proper diet, and upon our ability to do this will depend our success in the management of these cases.

In conclusion, therefore, let us note the foods that are of greatest value in the treatment of summer complaint and the indications for their use :

Whiskey, one of the most useful, never contraindicated, especially useful in acute cases during the first twenty-four hours of treatment, but may be given at any time in either acute or chronic cases.

Meat broths contain so little albumen and carbohydrates that they are never theoretically contraindicated. They may be given at any time in either acute or chronic cases, but they are especially indicated in acute cases after the first twelve or twenty-four hours of treatment.

Cream contains so little albumen that theoretically it is never contraindicated. It can do no harm in any form of the disease, but it will be found to serve the best purpose in chronic cases, and after the third or fourth day in acute cases.

Barley water and oatmeal water may be mixed with milk to advantage, as they mechanically facilitate the digestion of caseine. In this combination they may be useful in chronic cases and in convalescent acute cases.

White of egg is contraindicated in all cases of summer complaint when there are marked constitutional symptoms present, or when the diarrhœa is putrid or mucous, but it may be used in that form of the disease dependent on an abnormal acid fermentation, and the indications of this condition are sour stools with pain, flatus, or urticaria, and the absence of constitutional symptoms. It may also be used as a permanent

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\* See *Philadelphia Medical News*, September 1, 1888.

article of diet in infants incapable of digesting the caseine of milk.

Meat juice is one of the most valuable and easiest digested of the albuminous foods. It is indicated when the symptoms indicate that the disease is caused by an acid fermentation, and in chronic cases when other albuminous foods disagree. It may also be used as a permanent article of diet in infants incapable of digesting the caseine of milk.

Sterilized milk, in small quantities and greatly diluted, may be used as an article of diet in many of the milder forms of summer complaint. The reason why milk frequently does not aggravate the disease, when given in this way, is because the caseine and sugar of milk are taken in such small quantities that they are thoroughly disposed of before reaching the seat of the disease in the intestinal canal, while many cases do well when fed in this manner. I think we run an unnecessary risk in attempting to feed upon milk during the most acute stage of the disease, when we have other palatable and less dangerous foods. But after the constitutional symptoms have subsided, and the most acute stage has past, the milk is indicated, and may be given as directed above.

Mother's milk has the same indications as sterilized milk.

Peptonized milk is occasionally useful in chronic cases incapable of digesting unchanged caseine.

In the above summary I have attempted to give what I think are the proper indications for the most important foods used in summer complaint; while any of these foods may be absolutely refused by the child, and while any of them, although theoretically indicated, may for some inexplicable reason disagree, yet I think the list given above is sufficiently large to furnish not only a proper but a palatable diet for every infant sick of this disease.

UMBILICAL HEMORRHAGE, WITH REPORT OF  
A CASE.\*

BY W. A. CAMPBELL, M.D.,

Eaton, Ohio.

It is not with the object of reporting anything new that I present this paper to-day; but for the purpose of putting on record a case of a comparatively rare disease,—viz., umbilical hemorrhage.

The following is a report of the case: Infant K., male, was born at the county infirmary July 30, 1889. Mother American; fifth child. Mother's first and second child are living and healthy, to all appearances, except that second child has a large congenital scrotal hernia. The other two children are dead. The fourth child died at the age of six weeks from marasmus. Mother and grandparents (maternal) of child belong to the lower strata of society, and are inclined to violent outbursts of temper and epilepsy. I prescribed for mother for syphilis about two years ago. Can get no history on paternal side, the mother having given the names of several men whom she avers to be the father. The child was poorly nourished from birth. He had the snuffles from the first days of life. The funis came off on the fifth day, and everything seemed to be moving along fairly well.

I am indebted to Dr. A. C. Hawley for the report of the case for the first twenty-four hours, as I was out of town when sent for. The doctor reports as follows:

"In the absence of Dr. Campbell from home, I was called by his student, Mr. Lehman, on the evening of August 9, 1889, to see a little patient of the doctor's at the county infirmary, that was bleeding profusely from the umbilicus. It was a form of trouble which I had never met before, but immediately we attempted to arrest the hemorrhage by compression and by the use of styptics, having at hand only the acids, tannic and gallic.

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\* Read to Union District Medical Society at Hamilton, Ohio, October 24, 1889.



"We first tried compression with the thumb, but this having no effect,—not so much as producing the least coagulation of blood,—we applied tannic acid, dry, and at the same time used compression. This had no effect; then we injected into the umbilical vessels a solution of the acid, and continued with its external application and compression. These failed to arrest the hemorrhage. Then gallic acid was applied, with a like result. Having yet failed to check the hemorrhage, which part of the time was jetting and at other times only seeping, we now resorted to the needles, inserting them in the crucial form and applied the figure-of-eight ligature, which we felt quite sure would at once arrest all hemorrhage, but which failed to do so, in that capillary hemorrhage was alarming at the needle punctures. We then ligated the umbilicus *en masse* beneath the needles, which had the effect of completely checking the hemorrhage.

"From the mother's history, the cord had come away five days before, without any bleeding, and to all appearances was doing nicely until to-day, when bleeding began. The child was poorly nourished and had a distinctive icteroid hue. It had bled till it was very weak. Its cry had become a mere whisper. Upon examination, we found a small bullous syphilide upon the middle finger of the left hand. I knew nothing of the history of the mother, but was suspicious of syphilis, which was verified on the following day by Dr. Campbell, who had treated the mother two or three years ago for syphilis.

"We returned early the following morning to relieve the umbilicus of the ligature, for fear of sloughing, and then re-applied the figure-of-eight ligature, which had the effect of keeping the hemorrhage in check for several hours. Upon a more thorough examination this morning, we found several ecchymotic spots, which the mother thought had come from bruises, but which I assured her was not the case. Stimulants (*spiritus frumenti*) were ordered from the first, and I directed the mother to keep the child warm by the application of external heat."

August 10, P.M.—I was summoned to see the case. Took Dr. Hawley with me. Found that the patient had

been bleeding rather freely. On removing the dressings we found the needles and ligatures *in situ*. Blood was coming from beneath the ligatures and from site of needle punctures. Dressed it antiseptically, leaving the needles and ligatures alone. Applied considerable pressure with bandage. Condition of child poor. Blood thin and watery; no coagula found. Could squeeze the pale, watery blood out of dressings, but it would not coagulate. Other symptoms about as before reported. Prognosticated that the child would soon die from the effects of the hemorrhage. Sig.—Stimulants and camphorated tincture of opium internally. Owing to the very unfavorable prognosis did not deem it necessary to institute antisyphilitic treatment.

August 11, 12 M.—Found clothes and dressings saturated with blood again. Finding that the needles and figure-of-eight ligature was not going to check the hemorrhage, we decided to run a ligature around the margin of the umbilicus, and in this way close the open vessels. With the assistance of Dr. Hawley I passed a ligature around the umbilicus by introducing stitches about one-eighth inch apart and one-quarter inch from margin of umbilicus. Included within the stitches the skin and fascia immediately beneath. Upon making traction upon ligature, the margin of the umbilicus was drawn together. The punctures made by the needle commenced to ooze blood freely. Dusted the parts with Monsel's powder, and applied compression by pad and bandage. Upon examining the body, a number of ecchymoses and purpura spots were found on the back. There were several more bullous syphilides found on hands and feet. The child is becoming quite emaciated. Sig.—Continue treatment, with the addition of fluid extract of ergot.

9 P.M.—Was called on account of bleeding. Found bandages saturated with blood, but they seemed to be drying. Did not remove dressings. Cries very feebly. Nurses freely.

August 12, 9 A.M.—Has not bled any since last night. Clothes are dry. Did not remove the dressings. Many more bullæ have appeared. Sig.—Continue.

P.M.—We removed the dressings this evening. Had been

bleeding slightly during the day. Sloughing slightly in the centre of the umbilicus. Some inflammatory reaction was present, and the umbilicus projected slightly. Did not bleed during the dressing. Ligatures in place. Dressed it with iodoform and compress. Ecchymoses fading. Discovered an inguinal hernia on left side, which was easily reduced. Child seems stronger.

*August 13, A.M.*—Has been little bleeding since yesterday. Did not remove dressings. Sig.—Iodide of potassium and camphorated tincture of opium, and a dose of hydrargyrum cum creta.

*August 14, A.M.*—There was considerable hemorrhage during the night. The bowels moved during the night and the child seemed to strain very hard, and it was after this the blood was noticed. Upon removing the dressing, the ligature around the upper margin of umbilicus was found torn out, and the hemorrhage, no doubt, came from this source. Did not bleed during the dressing. Dressed with Monsel's powder, absorbent cotton, and bandage. Sig.—Continue internal treatment.

*August 15, A.M.*—Dressed umbilicus. No bleeding. No sloughing. Removed ligature. Ecchymoses and purpura about gone. Icterus fading. Many of the bullæ have become ulcers, with sharply-defined margins. Sig.—Continue.

From August 15 to the present writing (October 21) there has been no return of the umbilical hemorrhage. The lips became deeply fissured and bled freely, but soon healed on the application of the yellow oxide ointment. The ecchymoses entirely disappeared, as did the ictteroid hue. I find to-day but two bullous syphilides on the child. It is gaining slowly in weight. It is taking five to eight grains of iodide of potassium four times a day, and has done so for more than two months.

In our comments on the case we do not desire to devote any time to the consideration of that form of hemorrhage immediately following delivery, due to the neglect of the obstetrician to draw the ligature sufficiently tight to cut off the circulation through the divided umbilical vessels; or to the hemorrhage due to the tearing asunder of the cord during delivery.



Neither do we care to consider the hemorrhage, which follows the separation of the funis, due to granulations in the umbilicus. But, as stated before, we desire to call your attention to that form of hemorrhage which follows the falling off of the funis and is due to the opening up of the umbilical vessels. All writers on the subject state that this is of rare occurrence. The literature on the subject, at my command, is meagre. Smith \* tells us that one of the first cases on record was reported in the *Gentleman's Magazine*, April, 1752, by Mr. Watts, a physician of Kent, England. Since this time there have been many cases reported and several monographs written on the subject.

To rightly understand the source of the hemorrhage it would be well to look for a moment at the normal process of closure of these umbilical vessels. At birth the vessels of the cord consist of the two umbilical arteries, which are a continuation of the hypogastrics and the umbilical vein. These are enveloped by the gelatine of Wharton contained in the cells of an areolar structure (Gray †).

The arteries are very tortuous in their course and are richly supplied with longitudinal muscular fibres. Upon the application of the ligature to the cord these muscular fibres become contracted and make the inner surface of the vessels more corrugated, and in this way aid in the formation and retention of the thrombi that form in the distal portion of the hypogastric arteries. "While the healing of the umbilical cicatrix is taking place, the distal end of the artery undergoes a hyaline degeneration which pervades its whole thickness. The extremities of the two vessels, in contact just within the umbilicus, are soon reduced to a cord of gelatinous tissue in which all traces of the vessels have disappeared. This change extends for a distance of two centimetres, and is subsequently replaced by a fibrous cord which attaches the superior vesical artery to the umbilicus" (Warren ‡).

It is the failure of this normal physiological process to take place that gives rise to the hemorrhages under consideration.

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\* Diseases of Children, p. 86.

† Gray's "Anatomy."

‡ "Cyclopædia of Diseases of Children," Keating, vol. i. p. 251.

This brings us to the question, What are the causes of this pathological condition? The answer, expressed in a general way, would be that it was due to a feeble or non-coagulability of the blood; in other words, due to a dyscrasia of the system from some constitutional malady which prevents the formation of thrombi sufficiently firm to resist the pressure of the blood within the hypogastric arteries. The diseases that stand out most prominently in this rôle are jaundice, tuberculosis, scurvy, syphilis, hemorrhagic diathesis, and hæmatophilia (Smith,\* Morris,† and others).

We can, within the limits of our paper to-day, merely state in a general way what diseases have been accredited to the cause of this variety of hemorrhage. But we cannot enter into the consideration of the evidence that could be brought forth to substantiate each one. We wish to call your attention only to the cause of the hemorrhage in the case reported. It is stated that male children are more frequently affected with this form of hemorrhage than females, the proportion being two to one (Smith,\* Morris †).

On reviewing the report of the case we do not hesitate to state that the babe had hereditary syphilis. We have the maternal parent affected with it; the child had snuffles from the first days of life. The bullous syphilide appeared in the second week about the time the hemorrhage commenced. This is said to be the most precocious of all the syphilides of hereditary origin, and is usually the expression of a profound infection, and generally accompanied with visceral lesions (Taylor)‡. These bullæ were followed by fissured lips, marasmus, "old man" appearance, sallow skin, sunken eyes, etc.

These evidences of the syphilitic dyscrasia are sufficient to account for the want of firmness in the thrombi in the hypogastric arteries, and that hereditary syphilis was the cause of the hemorrhage we have not a doubt. The icterus, present in the case, we cannot credit with being the cause of the hemorrhage, although it made its appearance about the same time

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\* Diseases of Children, p. 86.

† International Encyclopædia of Surgery, vol. v. p. 463.

‡ Taylor, "Atlas of Venereal and Skin Diseases," p. 159.

that the hemorrhage did. We would place it as a symptom of syphilis, due to the destruction of red corpuscles and the liberation of the hæmatin, a result of the profound syphilitic dyscrasia.

The ecchymoses and the purpuric spots which appeared on the back and other portions of the body furnish additional proof of the existence of a general blood disease.

The oozing of the blood from the skin at the points where the needles pierced it, the ecchymoses, and the want of coagulability in blood collected would look very much as if there was a tendency to a hemorrhagic diathesis independent of the syphilitic dyscrasia. The family history does not show any tendency in this direction, and no doubt the condition of the blood was due to the profound syphilitic dyscrasia of which the child was a victim.

The prognosis in these cases is very unfavorable. Statistics show that five in every six perish. It is most unfavorable when jaundice and purpura hæmorrhagica is present (Smith,\* Gibbs †). This combination is considered by some writers as a precursor of certain death (Morris ‡). In the ARCHIVES OF PEDIATRICS (vol. iii. p. 607 and 612) is given abstracts of cases similar to the one we report to-day. They terminated fatally.

*Treatment.*—This is one of the most important divisions of this subject. It may be prophylactic in the case of a family affected with hæmatophilia, or where we are applied to by a mother during gestation, whom we know to be suffering from a constitutional malady, as syphilis. But, in the great majority of instances, the doctor's first introduction to the case is from five to ten days after birth. He finds his little patient bathed in blood, coming from an umbilicus that has partially cicatrized, but from some cause has been torn through by the blood-current, and is now jetting forth blood with every pulsation of the heart, showing that the hemorrhage is coming from the unoccluded hypogastric arteries, as in the case we reported

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\* Diseases of Children, p. 87.

† Cazeaux and Tanier, vol. i. p. 420.

‡ International Encyclopædia of Surgery, vol. v. p. 463.



to-day. The doctor has no time for the hunting up of the family history and taking into consideration its hereditary tendencies. Something has got to be done and that immediately.

Many things have been tried and have almost as often failed to permanently check the hemorrhage. Pressure by means of the finger or compress would likely first suggest itself where the hemorrhage is profuse. This would do until other things could be procured, but would be impracticable for any length of time. The application of the various styptics, applied either externally to the bleeding umbilicus or injected into the open vessels, as in the case reported, may be of service. And then we have the application of dry or wet plaster of Paris (Smith,\* Jacobi †).

When these means fail we can resort to the introduction of the needles, transversely, and application of figure-of-eight ligature (Smith\* and others), or the ligation of the umbilicus *en masse* by passing the ligature around beneath the needles, as practised in this case (Morris,‡ Jacobi §). The ligation *en masse* in this manner would soon cause sloughing. In this emergency I thought of the plan pursued in this case of passing a ligature around the margin of the umbilicus and drawing the opening shut. We thought this to be better than to ligate *en masse* beneath the needles, as the bridges of integument between the stitches would serve to keep up the circulation within the line of suture. It acted well in this case, and was the chief factor in checking and restraining the hemorrhage from the hypogastric arteries until the thrombi could form.

There is another surgical procedure to check these hemorrhages. It consists of underrunning the umbilical arteries with a hare-lip pin, or long needle, through the abdominal wall just below the umbilicus, and the application of the figure-of-eight ligature (Dakin ||).

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\* Diseases of Children, p. 88.

† Archives of Pediatrics, vol. v. p. 198.

‡ International Encyclopædia of Surgery, vol. v. p. 463.

§ Ibid.

|| Archives of Pediatrics, vol. vi. p. 649.

We may often employ all these means and then lose our little patient. Even after the hemorrhage is checked the infant may succumb to the dyscrasia that has been the primary cause in producing the hemorrhage.

*Constitutional treatment.*—This will entirely depend on the constitutional disease that has caused the dyscrasia. Owing to its debilitated condition we stimulated our patient from the beginning of the hemorrhage. It is well to give a laxative as a derivative measure. We gave ergot (fluid extract) in our case, but with negative results as far as we were able to see. Potassium iodide seemed to be what our case required. It has taken from five to eight grains four times a day ever since it was two weeks of age without any apparent ill effects. For the fissured lips we used the yellow iodide ointment with good results.

There are many points in the history of this disease and the case reported that would be interesting to dwell on more at length, but our paper has already grown too lengthy.

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## Clinical Memoranda.

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### EMPHYEMA IN CHILDREN.—A CLINICAL LECTURE.\*

BY HENRY DWIGHT CHAPIN, M.D.,

Professor of Diseases of Children.

GENTLEMEN:—The child I show you here is eighteen months old. He looks much emaciated, and it was on this account, and because of a slight cough that he was brought to the clinic. With the exception of one or two attacks of diarrhœa, he was perfectly healthy up to four months ago, when he contracted measles. This was followed by an attack of catarrhal pneumonia, which was treated here; but before recovery took place

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\* Delivered at the New York Post-Graduate Medical School and Hospital.

the case went from under our observation. He is brought to us again in this pitiable condition. Percussion of the chest shows complete dulness at the right apex, and flatness over the whole of the right side posteriorly. The left lung is extra-resonant; the chest measures eight and one-quarter inches on each side; and bronchial breathing is distinctly heard all over the right lung. The question first to settle in a case of this kind is, whether we have to deal with a chronic pneumonia or an empyema.

Empyema, as you know, is at times an exceedingly insidious disease, and in order to settle this important point in diagnosis, we shall raise the right arm and insert a hypodermic needle near the angle of the scapula. As you see, pus is withdrawn, and the diagnosis of empyema thus readily confirmed. When empyema comes on in this insidious manner, there is often no elevation of temperature, and, in fact, this child's temperature has been normal for the past week that he has been under observation; and, in addition to this, the respiration has not been much increased.

Pleurisy in these children is apt to be purulent from the first, particularly in cases where the nutrition is poor. The quantity of fluid exuded may be only a few ounces; but even this is sufficient to produce collapse of the lung. It has been stated that three ounces of fluid may produce collapse at the age of four months. The symptoms of pleurisy in young children are apt to be obscure. Pain may be present, but it is exceedingly difficult to localize it or make sure of its presence. In recognizing this symptom of pain, much help may be derived from a knowledge of the fact that the skin is usually hyperæsthetic over the inflamed pleura. Tenderness on pressure is thus, at times, very useful in aiding us to make a diagnosis. There is apt to be more pain when the effusion is purulent than when it is simply sero-fibrinous.

The fever is not so high, as a rule, as in pneumonia, in simple cases varying from  $99^{\circ}$  to  $101^{\circ}$  F.; but in cases attended by purulent exudation, the temperature at first will probably be higher.

The pulse is commonly accelerated,—140 to 160; but the respirations may not be notably increased. The ratio between the pulse and respiration is not so much disturbed as in a case of pneumonia, and the pulse is higher in purulent pleurisy than in the simple form.

The rational signs being often obscure, we must turn to the physical signs in order to aid us in making a diagnosis. Even here we may be readily misled.

*Inspection* will often be of great service. There is frequently



a worried expression of the countenance with a pale complexion, and the pinched look so often seen in connection with serous inflammations. It will be noticed that the respiratory movements on the affected side are not so active as upon the other, and the rhythm is apt to be irregular and jerking, and, to a certain extent, repressed upon the diseased side. It is most important to look for the position of the apex-beat; as the displacement of the heart by the pleuritic effusion is a very characteristic sign. In some cases I have seen, the apex-beat of the heart was conducted under the right nipple. Where the effusion is on the right side, the position of the heart is not so much affected, although the apex-beat may be raised to the left margin of the mammary region.

*Mensuration.*—In cases of pleuritic effusion in children, whether serous or purulent, there is not so apt to be a bulging in the intercostal spaces on the diseased side, and, indeed, it is occasionally found that the side affected by the pleurisy actually measures less than the sound side. The reason for this is that, in very early life, the lung, being so soft and compressible, offers the point of least resistance to the pressure of the fluid. In such a case, the lung is carnified, and the chest wall presents no evidence of the presence of fluid.

*Palpation* will not give much aid in these cases aside from noting the cutaneous pain, and the amount of displacement of the heart. The presence or absence of vocal fremitus is exceedingly difficult to establish in young children.

*Percussion.*—By careful percussion, we shall note dulness gradually changing to flatness according to the quantity of effusion. In the present instance, I was led to insert a hypodermic needle by the flatness detected by percussion. In cases where the whole of one side of the chest gives a flat percussion note, we nearly always have an effusion.

*Auscultation.*—It is an interesting fact that pleurisy with effusion in young children is almost always accompanied by bronchial breathing, and in the case before us we detected, by auscultation, bronchial breathing at the base, and at the apex broncho-vesicular respiration.

The bronchial breathing is owing to the fact that the chest is so small that all the sounds are easily transmitted; and in cases of extreme effusion the bronchial breathing is transmitted directly through the carnified lung. Occasionally ægophony is noticed where there is only a moderate effusion; but this sign is not of very constant occurrence; and is not heard where the lung is much compressed.

Crepitant râles are occasionally audible, probably from an inflammation of the lung immediately underneath the pleura.

In considering the differential diagnosis between pleurisy and pneumonia, we may bear in mind that the former is usually acute in its beginning, with a quick pulse and rapid and painful respiration, which has not been preceded by bronchitis; tenderness of the skin over the inflamed area; the fact that the apex-beat is usually displaced, and that there is complete flatness over the affected side, generally accompanied by bronchial breathing. It is important to remember, however, that these two diseases frequently coexist. In a large number of cases, pneumonia is the beginning of a purulent pleurisy. This seems to be the case in the present season; for I have observed a number of cases in which a catarrhal pneumonia gradually developed into an empyema. I would call especial attention to this fact, and advise careful and repeated examinations of the chest with reference to the possible existence of empyema in all cases of pneumonia that do not undergo resolution at the proper time. In the empyema of young children the effusion is not so apt to be encysted as in later life where previous attacks of pleurisy have formed adhesions and allowed the pus to become encysted. Moreover, the exudation is very apt to be purulent from the beginning.

In any case in which an effusion has existed in the pleural cavity for some time it is apt to be purulent, and it is a question whether pus in the pleural cavity is ever entirely absorbed. The pus may find an opening for itself through an intercostal space, into a bronchial tube, or, in rare instances, it may even perforate the diaphragm and cause a general peritonitis.

In any case where we are uncertain about the diagnosis of pleurisy with effusion, it is both justifiable and necessary to insert a hypodermic needle; no harm can come from this procedure. We must remember, however, in performing this little operation, that the needle must be of sufficiently large calibre to readily permit the passage of thick pus; and the puncture should not be made at the lowest part of the chest, because the thick clots of fibrin which are usually found in this locality are liable to clog up the needle. The puncture should be made at about the sixth interspace on the left side, and the fourth or fifth on the right, the arm being raised in order to separate the ribs as much as possible.

In very young children aspiration may be performed at first, but if it is not quickly followed by full expansion of the lung and obliteration of the abscess cavity, a free opening should be made.

When it is necessary to resort to such an opening, the incision should be made at that part of the chest which will secure

the most perfect drainage both when the patient is sitting up and when he is lying down.

The diaphragm rises relatively much higher in young children than in the older subject, and, in making this opening, it is important that it be not so low down that the diaphragm, as it rises, act as a flap-valve and thus prevent a free exit of the pus.

As this case is one of long standing, I think it better to make a free incision at once in the fifth interspace. In making the incision, keep parallel to the upper border of the lower rib in order to avoid wounding the intercostal arteries. It is my custom to use the needle as a guide to the knife. You see that the incision which I have made has provided an exit for considerable pus,—about four ounces. Having evacuated the pus, the question of proper drainage comes up for consideration. Before deciding this important point, it is desirable that we should reflect upon the conditions involved in the expansion of a lung that has been subjected to constant pressure by an exudation in the chest.

Certain physiologists have called attention to the fact that expansion of the lung is impossible when air can gain admission to the pleural cavity. In such a case, the effect of the respiratory movements is to drive the air in and out of the cavity instead of in and out of the lung, and consequently no renewal of the air within the lung is possible. Yet, as a matter of fact, we know that, after a free incision in cases of empyema, where the air has access to the pleural cavity, the lung does gradually expand.

Fraentzel, in his excellent and exhaustive article on pleurisy (Ziemssen's "Cyclopædia," vol. iv. 1876), believes that the whole of the pleura pulmonalis and costalis, after it has thrown off the various necrosed masses lying upon it, becomes covered with granulations, and at first those which lie close to one another become here and there adherent. These adhesions appear to commence most frequently near the root of the lungs, and spread from thence; while the hitherto compressed lung, by fits of coughing and other expiratory efforts, with a more or less closed glottis, fills itself with air from the sound lung. As far as I know, this is the first satisfactory explanation that has been offered of the re-expansion of the lung after the chest is opened in empyema.

Dr. O'Dwyer has recently shown by an interesting vivisection experiment, in which he opened the chest of a dog, that the re-expansion of the lung under these circumstances is accomplished by some force generated by the expiratory movements. This force consists of compressed air driven from the



sound into the contracted lung during forcible expiration, the sound lung being distended by a full inspiration followed by a spasmodic contraction of the expiratory muscles which condenses the air; and its escape being prevented by the partial closure of the glottis, a portion of it is pumped into the contracted lung. By repeating in quick succession these forcible movements of expiration, the collapsed lung is not only expanded until it completely fills the pleural cavity, but a portion may be actually driven through the opening in the chest wall.

In cases in which the chest wall has been opened, the lung re-expands after air has entered the pleural cavity, provided such expansion is assisted by a sort of flap-like action at the opening. With a violent expiration the diaphragm is pushed forcibly upward, and in rising helps to expel the air which has been admitted through the thoracic opening.

In a series of experiments made by Professors A. M. Phelps and W. Gilman Thompson upon dogs, these gentlemen found that by closing the opening with a valve at the end of a full expiration, the lung at once expanded with the next inspiration. Acting upon this idea, the drainage-tube which I am about to insert in the chest of this child, has its extremity covered by a piece of thin rubber tissue. This allows the exit of pus and air from the pleural cavity on inspiration, but closes the tube during expiration. In this way a certain amount of suction allows the chest to empty itself, but will not permit air to constantly pass into the free opening; hence, the lung is pulled out by a partial vacuum forming in the thoracic cavity by the force of inspiration and by the rush of air from the sound into the crippled lung. In this way, the problem of providing a vent for the air and fluids in the chest, and a means of preventing the entrance of air, seems to have been partially solved. The pump-like action produced by this arrangement hastens the expansion of the lung. Over this valve we shall put antiseptic gauze and cotton to catch the discharge.

The problem now is to promote the healing of the abscess, as in all abscesses, by rapid coaptation of its walls. This is accomplished by the expansion of the lung, the rising up of the diaphragm, and the sinking in of the flexible chest wall. In early life the ribs are soft and pliable, and hence the closing of the cavity occurs more readily than in later life. In some cases, however, owing to long pressure upon the lungs and thickening of the pleura, it is impossible for the lung to expand, and in such cases, after a certain point, the cavity can only be closed by the sinking in of the chest wall. This may be accomplished by resection of one or more ribs and the curet-

ting of the lining membrane of the abscess, to remove granulations and cheesy masses. It is rarely necessary to wash out the pleural cavity, and as children are very susceptible to poisoning from the use of antiseptic solutions, it is only necessary, in cases where fœtor develops, to irrigate with very weak solutions,—*e.g.*, corrosive sublimate, one to ten thousand. Children are so extremely susceptible to the toxic action of carbolic acid that this agent should be avoided.

The prognosis is so much better in children than in adults, that cases which would justify an exceedingly grave prognosis may in early life make a good recovery.

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## CHLORAL HYDRATE, ERGOT, AND NITRIC ACID IN THE TREATMENT OF WHOOPING-COUGH.

BY R. STEVENSON THOMSON, M.D., C.M.B.Sc.,

Hon. Extra-Physician Royal Hospital for Sick Children, Glasgow; Dispensary Physician Western Infirmary, Glasgow; Late Senior Resident Assistant, City of Glasgow Fever Hospital, Belvidere.

THE observations of which the following remarks give a short summary were undertaken about seven years ago, during my residence in the City of Glasgow Fever Hospital, with the object of ascertaining, as far as opportunity offered, the efficacy of these drugs in cutting short the duration of whooping-cough, in reducing the severity and number of the paroxysms, or in favorably modifying the course of the attack in any way whatever.

The notes were made in part by myself, and in part by trained nurses who had been associated with whooping-cough for many years, and were therefore familiar with its different aspects. The plan followed was uniform in each case. The patients were kept under observation for eight or ten days without special treatment; the drug to be tried was then administered and continued for two to three weeks, and finally the medicine was stopped, and the patient passed through the last stage of his illness without any treatment of a medicinal kind. The day was divided into two parts, from eight A.M. till eight P.M., and from eight P.M. till eight A.M. Every cough was marked on a card provided for the purpose, and the medicine was given at regular intervals both day and night. When a child had several sharp paroxysms in rapid

succession, these were reckoned a single cough. Lastly, as a case progressed, notes of the severity of the paroxysms were made by myself.

Sixty cases were treated with nitric acid, a method of treatment introduced by Amordi, of Montreal, Canada. (F. C. T. Amordi, "On Nitric Acid in Hooping-Cough," *Canada M. J.*, Montreal, 1852-53, i. 211-213, and J. D. Gibb, "On Hooping-cough with its Successful Treatment by a New Remedy," London, 1854.) The preparation always used was the dilute acid of the British Pharmacopœia made up with syrup of oranges and largely diluted with water. This makes a pleasant acid drink, eagerly taken by children. A dose of this mixture, corresponding to twenty minims of the dilute acid, was given every few hours to all children above two years of age for a week after the administration was begun, and thereafter every two hours till the treatment was stopped. Children between one and two years were given half this dose, and younger children a fourth. In none of these sixty cases was I able to convince myself that this agent had the very slightest effect in reducing the number of paroxysms or in shortening the ordinary course of the disease. The severity of the paroxysms was also unaffected. In nearly all the cases treated with nitric acid, as well as in those treated with hydrate of chloral and ergot, a progressive improvement was noticeable beginning a few days after admission and continuing till the end of the case. This no doubt was due to the fact that the hospital is situated in the country, so that the children have every advantage of fresh air and the more perfect hygienic surroundings. Improvement under these conditions is evidently the normal course of the uncomplicated disease, and this was neither advanced nor retarded by the nitric acid treatment. One point of importance observed in connection with the administration of this drug was the ruddy and healthy appearance of the children, in this forming a marked contrast to those treated with chloral or ergot.

The death-rate among the patients treated with nitric acid was high, being a fraction over twenty-three per cent. Seven per cent. of the deaths occurred among children under twelve months, while the ages of the others ranged from one year to five. The immediate cause of death among the younger children was convulsions, while the older ones were mostly carried off by catarrhal pneumonia. Of course, when complications such as these occurred they were treated on their own merits.

The use of ergot in the treatment of whooping-cough was first recommended by Dr. Hampel (*Practitioner*, vol. i. 263).



This drug, in the form of the liquid extract (British Pharmacopœia), was administered to forty-nine children in doses of ten minims every four hours when the patient was under two years of age, and when the child was older than this in doses of twenty minims at the same intervals. Of the cases thus treated, a little over sixteen per cent. died, two of the deaths occurring in the children under twelve months. As in the case of the nitric acid treatment, it was impossible to convince myself that the ergot had any beneficial influence on the disease; the cause, number, and severity of the paroxysms were quite uninfluenced by the medicine.

During the past twenty years chloral hydrate has been more or less extensively used in the treatment of whooping-cough, and, judging from the literature, with greater success than most other drugs which have been advocated at various times. Ninety-five children were treated with chloral hydrate, and of these sixteen per cent. died. It is of importance to note in this connection that only one child died from convulsions, a fact of consequence when we consider the number of children that die from convulsions following on whooping-cough. As in the case of the other drugs tried, chloral hydrate seemed to have no special influence on the course of the disease. The steady improvement which was noted from the first in nearly all the cases being uninfluenced as far as the number of paroxysms was concerned, yet it was easy to satisfy one's self that though the number of the attacks was not diminished, their violence was very greatly reduced, and, in addition, I am inclined to think that the tendency to convulsions was greatly diminished. The usual dose for children over two years was five grains every four hours, and half that quantity to children under two years. The children seemed to stand this pretty free and continuous exhibition of chloral very well, yet it is better to avoid it when there is a tendency to vascular depression.

To sum up: None of these drugs is a *specific* for whooping-cough. Ergot is absolutely useless. Nitric acid is of no use as a specific, but its well-known tonic action makes it a useful drug when combined with the other means usually employed to improve the health of children suffering from whooping-cough. Chloral hydrate is of considerable service in so far as it mitigates the violence of the paroxysmal cough and diminishes the tendency to convulsions, but it has no influence on the number of paroxysms, nor does it shorten the attack.

## REPORT OF A CASE OF CONGENITAL DEFORMITY.

BY JOHN RIDLON, M.D.

THE child was a female, a foundling, and eight years old when she came under my observation on August 18, 1888. She was an inmate of a charitable institution in Western New York, and the early history was unknown.



The accompanying cut shows the deformity. The whole left lower extremity is shorter and smaller than the right. There is no paralysis, and the muscular strength is good, though less than that of the other leg. The fibula cannot be felt at its head, at the outer malleolus, or anywhere along the leg. The foot is shifted to the outer side; the sole can be placed fairly well upon the floor, but it shows a tendency to evert, and a band can be felt in the place of the outer malleolus, tightly drawn when an attempt is made to invert the foot. There are but four toes present on this foot.

Circumference of thigh, right ....	14 $\frac{1}{2}$ inches.	} Difference 1 $\frac{3}{4}$ inches.
"    "    left.....	12 $\frac{1}{2}$ "	
From anterior superior iliac spine to sole, right .....	26 $\frac{1}{2}$ "	} " 6 $\frac{1}{2}$ "
From anterior superior iliac spine to sole, left.....	20 "	
Length of femur, right .....	13 $\frac{1}{2}$ "	} " 2 "
"    "    left.....	11 $\frac{1}{2}$ "	
Length of tibia, right .....	9 $\frac{7}{8}$ "	} " 2 $\frac{3}{4}$ "
"    "    left.....	7 $\frac{1}{8}$ "	
Inner malleolus to sole, right.....	2 $\frac{1}{4}$ "	} " 1 $\frac{3}{4}$ "
"    "    "    left.....	2 $\frac{1}{2}$ "	

## REMARKS UPON A CASE OF EMPYEMA, COMPLICATED WITH PULMONARY ŒDEMA.\*

BY FRANCIS HUBER, M.D.,

Chief of Clinic for Diseases of Children, Vanderbilt Clinic, College of Physicians and Surgeons, New York.

THOUGH the subject of empyema has but recently been discussed. before this section, I have taken the liberty to present the following case, in order to direct attention to a not infrequent complication, and to lay stress upon a practical point in the management of cases complicated with œdema of the other lung.

The little patient, Jesse W., aged twenty months, was referred to me, through the courtesy of Dr. D. Cook, December 5, 1889. Unfortunately, I was not able to see the child until midnight, though notified earlier in the evening that effusion was present with œdema of the other lung. I found the patient, who had been ill sixteen days, in a very precarious condition, extremely restless, tossing about wildly and crying incessantly. Marked orthopnea present during a number of hours. Face and extremities cyanosed; pulse feeble; limbs cold; eyes sunken and heavy. Several drachms of brandy were given, and the child, seated in its mother's lap, was aspirated, and about six ounces of purulent fluid drawn off, very slowly, through a small needle. Though the breathing became easier, the general condition was bad. The child was at once placed in bed with the head low, hot bottles being applied to the extremities, and warm applications over the præcordial region. Very soon the little one rallied and grew quiet, a little later fell asleep, and passed a fairly comfortable night. The next day, as the child had gained ground and looked considerably better, it was determined to operate, the œdema of the other side having subsided. Accordingly, assisted by Dr. Cook, the child was placed upon the healthy side, and, without an anæsthetic, the chest was incised posteriorly below the angle of the scapula, and a drainage-tube inserted. The cavity was now irrigated with hot water and an antiseptic dressing applied. Irrigation was subsequently employed once or twice to wash out some lymph masses. A sheet of rubber, several inches square, was placed

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\* Presented at Section of Pediatrics (Academy of Medicine), April 10, 1890.



over the drainage-tube to act as a valve. This innovation, however, did not impress Dr. Cook or myself very favorably, and was dispensed with after a few days. The subsequent course was favorable, and in less than four weeks not only had the lung expanded fully, but even the integumental wound had healed.

Hyperæmia or congestion of the lungs is a very grave complication, which may result in œdema and even cause free albuminoid and frothy expectoration, often terminating in asphyxia and death by suffocation, œdema pneumonia serosa, of Traube,—acute albuminoid expectoration of the French authors.

When pulmonary œdema occurs as a complication of purulent pleurisy, it adds to the gravity of the case, and may be the immediate cause of a fatal termination. The treatment should be prompt and bold. Stimulants of various kinds must be administered and the chest aspirated without delay. The quantity to be drawn off must necessarily vary with the circumstances of the individual case. Even in simple cases of effusion there is ordinarily greater or less danger of producing fresh congestion and hyperæmia of the lungs in removing large quantities of the effusion. It must not be lost sight of that our purpose is to relieve the intrathoracic pressure, to free the overburdened heart, and to remove the symptoms of oppression. As has been well said, "slowness in the withdrawal of the fluid, as well as the small quantity drawn, lessens the probability of any unpleasant effect." Bowditch says, "I always draw with great deliberation. I pull so lightly upon the handle of the piston that it seems as if the fluid itself were pressing out from the chest and pushed the piston upward, my hand simply following the impulse."

If this be true of an uncomplicated case, the lesson applies with far greater force to a case in which the danger to be avoided already exists and presents itself to us face to face. Some years ago, after reading of a number of cases of empyema cured by aspiration, I was in the habit of withdrawing large quantities, and did not meet with any bad effects in ordinary cases of purulent effusion. In several instances in which œdema was present upon the other side, though the aspiration was slowly conducted and the patients stimulated, the œdema progressed, and the cases resulted fatally within thirty-six hours. It is true, the cases were unfavorable, the œdema of the lung being well marked, but, in the light of subsequent experience, I am forced to concede that had the quantity drawn off been less, the circulatory change would not have been so extreme within a comparatively short time, and the failing heart might

have regained its tone, and the termination perhaps been made favorable. Since then three other cases of empyema with pulmonary œdema have come under my observation. From four to six ounces of pus only were drawn off, the patient stimulated, and the heart allowed to regain its force; the pulmonary œdema gradually subsided within six hours, and, as the case reported above, subsequent incision with drainage was practised, followed by recovery. The complication in my experience occurs rather in the acute suppurative pleurisies, in which class, as a rule, the constitutional symptoms are severe, the effusion of liquid rapid, and the heart's action greatly enfeebled. It occurs rather early too in the history of the case, sometimes within one or two weeks. I have not observed it in the subacute or chronic variety, where the heart has an opportunity to accustom itself gradually to the extra work demanded.

Its mode of onset, too, may be rather sudden. A child three years old was left fairly comfortable on the morning of the seventh day; unforeseen circumstances prevented the evening visit. During the night I was called out, and found the patient suffering from orthopnoea, cyanosed, with the usual symptoms of extreme "air hunger," due to marked œdema of the other lung. I was compelled to aspirate at 3 A.M. and drew off about four ounces, sufficient to relieve the urgent symptoms. The same afternoon, when Professor Jacobi saw the case in consultation, the danger was over. A few days later the child was operated upon and recovered perfectly.

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## NEW YORK ACADEMY OF MEDICINE.

### SECTION ON PEDIATRICS.

*Stated Meeting, February 13, 1890.*

L. EMMETT HOLT, M.D., *Chairman*; W. L. CARR, M.D.,  
*Secretary.*

#### SUDDEN DEATH IN AN INFANT FROM AN UNUSUAL CAUSE.

Dr. E. L. Partridge related the case, that of a child four months of age, which was under the care of a wet-nurse. For a few days it had been somewhat restless, and vomited more food than usual. In connection with simple medication it had been given one dose of five drops of paregoric November 10. At 4 P.M. it was very bright; an hour earlier it had

been dressed, was put in its cradle, cried a little, but ceased almost immediately. About half an hour later it was seen to have a blue appearance, the nurse could not see it breathe, and, on examination, was found to be dead. Another servant, who was in the room when the child was put to bed, said the nurse shook it a little, when it ceased crying almost at once.

The autopsy showed no lesion of the heart capable of causing death. The liver and kidneys were normal. The lungs were congested.

The back part of the buccal cavity contained a thick whitish fluid which looked like half-digested milk. The œsophagus was distended with fluid of the same character. The larynx and trachea almost down to the bifurcation contained the same kind of fluid.

Dr. Partridge said it seemed the combination of circumstances which led to the child's death was the fact of its having nursed and failed to swallow immediately a quantity of fluid which was in its mouth. Then there was a certain amount of shaking of the child, rather sudden and unexpected even to the child itself, fluid entered the air-passages, and caused death.

Dr. Joseph E. Winters inquired whether the nurse may not have been accustomed to giving the child paregoric unknown to the parents, for he had known several cases of constipation and sickness traceable to that cause.

Dr. Henry Koplik remarked that it was very easy by shaking or playing with a child shortly after a meal to force up some of the food into the mouth, and it seemed not unlikely that may have taken place in this case, the food after entering the mouth passing into the trachea and causing strangulation.

Dr. Agremonté was disposed to believe, with Dr. Koplik, that the milk had come from the stomach, perhaps by coughing, and entered the air-passages.

#### A NEW APPARATUS FOR INFANT-FEEDING BASED ON THE INFANT'S WEIGHT INSTEAD OF ITS AGE.

Dr. August Seibert opened the discussion on this subject, which was referred to the section from the Academy where Dr. Seibert had read his paper some weeks previously.

The apparatus, he said, was intended for sterilizing the milk or fluid food of artificially-fed children. And while the principle was not new, this particular apparatus possessed certain advantages over others which made it specially desirable. The other apparatuses with which he compared his were those



of Escherich and Soxhlet. The chief objection to these was that the size of the bottles was based on the age of the infant instead of on its weight. The bottles were too large, and led to the administering of more food than the stomach was capable of digesting. Dr. Seibert had had constructed bottles of six different sizes, to contain three, four, five, six, seven, and eight ounces respectively, the first for infants weighing irrespective of age six to eight pounds, the second for infants weighing nine to ten pounds, the third for those weighing eleven to fourteen pounds, the fourth for those weighing fifteen to sixteen pounds, the fifth for a weight of seventeen to eighteen pounds, and the sixth for a weight of nineteen to twenty pounds. Eimer & Amend were the manufacturers, and sold a set for one dollar, with a caster-like apparatus to stand them in, the whole being placed in a covered vessel with a little water at its bottom which boiled thirty to forty-five minutes and sterilized the milk by the steam surrounding the bottles. As the child increased in weight the set could be exchanged for a size larger by paying an additional twenty-five cents. The stopper consisted of rubber, with a notch cut in the side at the lower end, through which the steam could escape during sterilization, and could be pushed down at the close of the sterilizing process so that the bottle became airtight. The neck of the bottle shaded into the body, and the bottom was oval, making it easy to clean. The card of directions for the nurse also stated the number of hours to intervene between the feedings,—two hours for the smallest, three for the largest named.

The point upon which the author laid particular stress, and which he desired to have discussed, was the propriety of regulating the quantity of the child's food by its weight instead of by its age.

Dr. J. Lewis Smith read a paper in continuation of the discussion, preceding it with some verbal remarks to the effect that it was his custom to boil all food of artificially-fed infants. He boiled milk two hours, for some of the microbes which it contained were known to be very tenacious of life.

His paper treated in general of over-feeding in infants under one year of age. It was more common, he thought, in infants which were bottle-fed than in those nourished at the breast. On the other hand, infants fed in both ways frequently failed to receive sufficient nourishment. The quantity might be sufficient while the quality was deficient.

Passing to the subject of discussion proper, he quoted some authors who had advanced the view that infants should receive a certain amount of food during the twenty-four hours,

varying with the age. A Russian physician, on the other hand, had asserted that the quantity of food should depend upon the weight of the infant instead of upon its age. This was the principle, also, upon which Dr. Seibert's formula had been based. The author then related briefly some doubts which had arisen in his mind with regard to the advantages of this method, with the hope, he said, that they might be dispelled by a better understanding of the method.

Is it a fact, he asked, that the heaviest animals of a species uniformly require the most food? Is not the amount of food required determined to a considerable extent by the activity of the animal, and the amount of molecular disintegration of the tissues consequent on exercise? Take two infants of the same age, one may lead a sluggish life, being most of the time asleep. It has a superabundance of fat and weighs heavily; the other is more hours awake, its limbs more active, it probably weighs one or two pounds less than the other, as it is less fat, and has more frequent evacuations. Does not the latter infant require as much food as the former? A rachitic child with a big head and big joints, and a pendulous abdomen, may weigh a pound more than a healthy child of the same age; does he in consequence require more food?

A large proportion of infants remaining in the city either lose or do not gain in weight during the summer months; they weigh no more, or even less, at the close of September than in the beginning of June; shall we give them the same amount of food or even less at the end of September when their appetite begins to return than they were allowed the first of June because they weigh the same or less?

Infants that have had any sickness except the mildest lose in weight; must we diminish the quantity of food so that it will correspond with this loss of weight? In New York tenements a large proportion of infants weigh less than they should on account of improper food. Must we give them an amount of food corresponding with their weight? In illustration he related the case of a child starved for want of proper food; he would not think of regulating the amount of food in such a case by the weight.

It seemed to him that many observations would have to be carefully made in order to formulate rules for the feeding of infants which would need no change. A few years ago he had made some observations in the New York Foundling Asylum to determine the amount of food required for children of different ages. They took healthy, well-nourished children, and weighed them immediately before and after feeding or nursing, during a long period, by which means it

seemed one could best determine the amount of food required, and the frequency of its administration.

From these experiments the following deductions were made: During the first week the amount of food at each meal was one ounce, number of feedings per day ten, daily quantity ten ounces. At the third week, amount of food at each feeding one ounce and a half, number of feedings ten, daily quantity of breast milk fifteen ounces. At the sixth week, two ounces at each feeding, number of daily feedings eight, total sixteen ounces. At the third month, three ounces at each feeding, number of meals eight, total twenty-four ounces. Fourth month, four ounces at each feeding, feedings daily seven, ounces for the twenty-four hours twenty-eight. Sixth month, six ounces at each meal, number of meals six. Tenth to the twelfth month, eight ounces at each meal, number of feedings daily five, total forty ounces.

Dr. Joseph E. Winters objected to some of the statements made by Dr. Seibert. In the first place, he had said that all artificially-fed children were overfed. Dr. Winters mentioned some cases where he thought there could be no doubt that this was not true. Nor were the bottles always too large, as had been asserted. Then, too, he had found, contrary to the statement of Dr. Seibert, that the majority of intelligent mothers followed strictly the directions of the physician. The trouble was that the physician seldom gave sufficiently exact instructions. For the reasons given by Dr. Smith, and other reasons, he thought the age rather than the weight of the child should determine the amount of its food. The exercise of infants varied as greatly as in adults, and the amount of food should also vary. Then, too, a child weighing six pounds when born sometimes weighed more at the end of three months than one which weighed ten pounds when born. In the mean time it required more food. He therefore asserted that one could no more feed an infant by its weight than he could feed an adult by his weight. A man weighing one hundred and ten pounds often consumed and must have more food than another man weighing two hundred and ten pounds. The same rule applied in this regard in men as in horses.

Then, an infant reduced by some disease should not after the first few days of convalescence be fed by its weight; it required more food, and would not regain its original health as fast as if fed a larger quantity.

Dr. W. P. Northrup approved of Dr. Seibert's attempt to introduce some system among the mass of the people with regard to the feeding of their infants. There was no rule, however, to which there were not some exceptions. The ob-



jections offered by Dr. Winters were based, he thought, chiefly on exceptions. When it came to the question of *sterilizing* milk, he thought it required something more than what Dr. Seibert had introduced. A greater degree of heat was necessary than could be obtained by a wet steam bath such as he proposed. For by this the temperature was scarcely raised to 212° F. The vessel devised by Dr. Cheeseman, comparatively inexpensive, could be used with the apparatus presented by Dr. Seibert, and permitted of raising the temperature to a much higher degree.

Dr. Dorning did not agree with Dr. Seibert in measuring the amount of an infant's food by its weight. It was to be determined by the child's capacity rather than by its weight. The principle could not be applied to a child at the breast, at least, for we were unable to tell how much milk it obtained during a single nursing. The great trouble with the feeding of infants consisted, he thought, in giving them the bottle or breast too frequently.

Dr. Seibert repeated his belief that the weight of the child rather than the age should determine the amount of its food, and said he had never seen the muscular exercise varying in infants as much as it did in the wood-chopper and clerk. Too refined distinctions could not be made if we were to establish any general and much-needed rules in the feeding of infants raised in tenements. As to an infant nursing twelve times in the twenty-four hours, he thought it should never be allowed. Eight times was often enough. With regard to sterilizing milk, he said it was not the intention in steaming it in this manner thirty to forty-five minutes to completely sterilize it so that it would keep for weeks or months; it was simply that it should keep perfectly during the time necessary, twenty-four hours or more.

The Chairman said the statement had been made several times during the evening that there was no relation between the size of the child's stomach and its age. During the past three years he had been in the habit of measuring the sizes of stomachs at autopsies by carefully distending them with water up to the point of obliteration of all the stomach folds. He had been very much surprised to find that a child four months of age, although it might weigh only seven pounds, had a stomach of the same capacity as one of the same age weighing fourteen or sixteen pounds. This rule held with tolerable regularity up to one year of age. So that it seemed there was a pretty regular growth of the stomach from the first to the twelfth month, and that it did not vary so much with the weight and nutrition of the child as one would at first suppose.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Carter, Alfred H.: *The Principles of Infant-Feeding.* (*Birmingham Medical Review*, August and September, 1889.)

Cow's milk offers the most available artificial food for infants. In its preparation the caseine must be diluted, its objectionable mode of coagulation obviated, its acid reaction corrected, and it should be sterilized. This, the author believes, is best accomplished by Meigs's method, which is scientific and practical. The next best food he believes to be milk and barley-water or condensed milk. The latter he dilutes at least seven times, and prefers the sweetened milk, as the proportion of sugar is not too great when diluted for use. He acknowledges, however, that children thus fed are particularly prone to rickets, which he attributes to deficiency of fat.

The average amount for each feeding during the first week should not exceed an ounce. From this time forward—roughly speaking—at the rate of an ounce a month up to six months. After four months of age a healthy child should not require food between 10.30 P.M. and 6 A.M.

TABLE.

Age of child.	Quantity at each meal.	No. of meals.	Total quantity of food.
1st week.....	1½ ounces.....	10 .....	15 ounces.
1-2 months.....	2-2½ " .....	9 .....	18-24 "
3-4 " .....	4-5 " .....	7 .....	28-35 "
5-6 " .....	6-8 " .....	6 .....	36-48 "

Nursing-bottles, fitted with long rubber tubes, are tolerated because of supposed convenience, and directions given by which it is alleged they may be cleansed.

Among the signs of suitability of the food, two are of special importance,—the rate of increase in weight and the condition of the fecal discharges.

TABLE

*Showing Average Increase in Weight.*

Age.	Per week.	Per month.
1st month.....	7.5 oz.....	30 oz.
2d " .....	7.6 " .....	30 "
4th " .....	5.5 " .....	22 "
6th " .....	3.6 " .....	14 "
8th " .....	2.8 " .....	11 "
10th " .....	2.0 " .....	8 "
12th " .....	1.4 " .....	5 "

The rate of growth is, therefore, about twice as rapid during the first as it is during the second half of the first year. At first the rate is about one ounce per day, diminishing to about half an ounce at six months, and one-sixth ounce at the completion of the first year. The weight of every young child should be frequently taken, and any serious irregularity in the rate should at once call attention to the quality and quantity of the food.

Lees, D. B.: On the Treatment of Pneumonia by the Ice-Bag. (*Lancet*, November 4, 1889.)

The author has used with success the ice-bag in the treatment of pneumonia. He believes it a less objectionable plan than compresses. It retains its cold until the ice is melted and thus makes a more powerful local impression. The presence of the ice-bag is usually pleasant to the patient, even to children.

The writer gives details of his experience, and classifies the cases according to the apparent effect, as follows:

A. Cases in which immediate and final arrest of the pyrexial process followed the application of ice.

Five cases are reported in this class, ranging in age from four to twenty-five years.

B. Cases in which immediate arrest of the pyrexial process followed the application of the ice-bag and a relapse followed its removal.

Two cases are reported.

C. Cases in which immediate arrest of the pyrexia followed the use of the ice-bag. A relapse followed its removal, and a second fall occurred when the ice was reapplied.

Three cases are reported in this class. One was an infant six months old.

D. Cases in which rapid fall of temperature followed the application of ice, but relapses (apparently due to implication of fresh portions of lung) occurred while the ice was being continuously applied.

Two cases, aged thirteen and fifteen years respectively, illustrate this class.

E. Cases in which no immediate arrest of the pneumonia followed the application of ice, but obvious relief to symptoms resulted.

The histories of four cases are given in this class. Some of these are of great interest.

F. Cases in which no very obvious benefit resulted from the use of the ice-bag.

Two cases reported.



This list comprises all the cases treated by the ice-bag in the author's experience. Reviewing the eighteen cases narrated, we find that none of them died. It seems that two would have died but for the ice-bag. And two more, in the opinion of the author, were certainly saved by the treatment.

In the great majority of cases remarkable improvement followed the application of the ice.

The reduction of temperature was very striking, especially in children. The improvement was also noticed in the arrest of the development of physical signs, and also of the general symptoms. In many cases this was far advanced when the crisis came.

No harm has followed the employment of the ice-bag in pneumonia. Collapse might be produced by the incautious use of ice, but it is only likely to occur in young and feeble children. This occurrence may always be prevented by careful observation and removal of the ice-bag when the temperature falls to 100°.

In some cases it may be well to apply warmth to the feet while the ice is applied to the chest.

It is well to bear in mind that cold has a depressing effect on the heart, and it is well not to place the ice-bag over the præcordial region.

The author does not advocate this treatment in feeble children, the aged, or adynamic conditions. The author's conclusion is that the ice-bag applied over a pneumonic lung has a curative influence. It distinctly tends to repress the inflammatory process.

This is true whatever theory of the causation of the disease be adopted. Confirmatory evidence of the value of this method of treatment is found in Dr. Angel Money's paper, and in the *Lancet* of August 10, 1889, where there is a report of one hundred and six cases treated in this way by Dr. Fieaudt, with a mortality of only three per cent.

#### DISCUSSION.

Dr. Goodhart had for eighteen months used no other application than the ice-bag in cases of acute pneumonia, and he gave an account of eighteen thus treated. There is no danger, and the ice is a useful alternative.

Eight cases were relieved promptly, seven not at all, and three suffered from slight collapse, but of a temporary nature. Its use should be avoided under two years of age.

Dr. Sturges agreed with Dr. Goodhart rather than with Dr. Lees.

Dr. Money believes in the use of this method in all but what he called epileptic pneumonia. He did not say that it curtailed pneumonia. It relieved the patient and was a safe application.

Dr. Phillips believes that the ice-bag lowers temperature, but that it might be applied to any part of the body for this purpose. He said that on its removal the temperature would rise again. This was true of the use of all antipyretics, and it was doubtful whether it was desirable to attempt a lowering by such means, unless it had attained a very high degree.

Dr. Tirard had tried the ice-bag treatment in six cases. Three were benefited, and in three alarming collapse was produced. By the ice-bag comfort was produced but the disease was not shortened.

The *Lancet* says editorially that whenever any radical change of treatment of any common disease is recommended it has to encounter numerous objections, not only before it is generally adopted, but before it is fairly tested. The sources of fallacy are numerous. No disease has given rise to more conflicting statements than pneumonia, and in no disease is it more important to guard carefully against erroneous deductions from favorable results. In spite of the prevalence of the idea of treating pneumonia by poultices there is no sound basis for it. Most practitioners would defend the practice by referring to the relief given by hot applications.

Dr. Lees, while strongly advocating this treatment by cold applications, spoke with considerable caution of his results and their interpretation. There is a unanimity of belief in the absence of risk if the cases are carefully watched and any tendency to collapse controlled by brandy and warm applications. It was the experience of all who spoke that the treatment gave relief from pain, lowered temperature, reduced the pulse and frequency of breathing, and promoted sleep.

When we look for ill results in the accounts given, they are not very apparent or very serious.

In no single instance was any extension of the inflammatory process attributed to the use of the ice-bag, and this is certainly a strong argument in its favor.

On the other hand, the rapid fall of temperature, blueness, and coldness is a warning worth bearing in mind. Reviewing the whole discussion, it seems to be desirable that this method of treatment should be more generally studied, for it appears probable that in selected cases it may in time wholly replace the former routine of poultices.

Fever and pain are both controlled by the ice-bag, while only pain is controlled by poultices.

The sense of *bien-être* of the patient is improved and there is relative freedom from risk. The treatment will be sure to encounter opposition. The conviction that the illness arises from a chill will tend to render this method an apparent anomaly. Still most people bow before experience.

## II.—MEDICINE.

Cheadle: Various Manifestations of the Rheumatic State in Early Life. (*Lancet*, April 27, May 4, 11, and 18, 1889.)

There is no disease more familiar than acute articular rheumatism; but the following lectures present some new aspects of this disease.

Articular inflammation is only one of the many direct and sometimes independent manifestations of the rheumatic state. In the rheumatism of early life other morbid conditions appear prominently and constantly, which may claim equally with the arthritis to be regarded as direct results of rheumatic activity.

In children the disease appears under the simplest conditions, and should be regarded as representative.

Endocarditis, pericarditis, pleurisy, and tonsillitis are constant accompaniments of articular rheumatism in adults; but in children subcutaneous tendinous nodules, chorea, and exudative erythema are developments of rheumatism.

There are also other affections which have been deemed to be minor expressions of the rheumatic diathesis; but the author limits the test to those generally accepted. All of these may be set up by other causes than the rheumatic stimulus except the evolution of subcutaneous tendinous nodules.

The irritant inflammatory effect is upon fibrous tissue, whether of the joints or other structures.

The *arthritis*, in childhood, may be absent altogether in a seizure undoubtedly rheumatic in nature. Other fibrous tissues are more susceptible than joint tissues in early life. The reverse is true in adult life. None of the manifestations of rheumatism are to be regarded as complications or sequelæ. They are essential phenomena. In early life the various phases tend to arise independently and to be spread out over a considerable time. Any one may be the starting-point. All are direct and independent results of the rheumatic disturbances though independent of arthritis. A group of signifi-



cant affections thus isolated might not be regarded as rheumatic, unless the possibility is remembered.

There are two other characteristics of rheumatism in childhood,—the influence of sex and of inherited predisposition.

All ages taken together, rheumatism is more common in males. In early life there is a preponderance of females over males. This is chiefly due to the excess of liability of females between the ages of eleven and fifteen years.

Family predisposition is very clear in rheumatism. Rheumatism is transmitted as strongly as the tendency to gout.

By statistics it is proven that an individual with an hereditary predisposition is five times as liable to have rheumatism as one without this family predisposition.

The various phases of rheumatism are considered in detail.

The arthritis, sometimes absent, is nearly always present at some period of the rheumatic efflorescence; but in children it is usually mild, attracting little notice, and soon forgotten. It is subsequent heart-disease which brings it into notice.

The recognition of arthritis in children is of immense importance, since a fatal endocarditis or pericarditis may be insidiously developed.

The first lecture ends with a discussion of the differential diagnosis of essential paralysis, syphilitic disease of the ends of long bones, and infantile scurvy from this mild arthritis in childhood.

The effect of rheumatism in producing *anæmia* is remarkable: the extreme palor and the hæmic murmurs are most notable.

Dr. Goodhart goes so far as to say that children of rheumatic parents are habitually anæmic.

The presence of rheumatic poison appears to be inimical to the red corpuscles or their hæmatin.

*Tonsillitis* is ranked as one of the rheumatic series. It may come at any period of the series, although it usually precedes the arthritis. It may be repeated from time to time. It is possible that tonsillitis may occur as a solitary expression of the rheumatic state. In many cases it arises apart from the articular manifestation.

The decision, whether a given case of tonsillitis not immediately associated with articular rheumatism is of rheumatic nature, must be based upon a comprehensive survey of the patient's life-history and family predisposition, as well as of the accompanying symptoms.

*Erythema exudatum*.—The connection of this trouble with the rheumatic state appears more clearly than in adults. It appears in various forms,—*erythema marginatum*, *erythema papulatum*, *erythema nodosum*, and *urticaria*.

Erythema may occur at any point in the rheumatic series, and is often associated with other manifestations.

*Erythema nodosum* and *purpura rheumatica* have each a local quasiarthritis. They are sometimes associated with true articular rheumatism.

*Chorea* is one of the most interesting of the series. When associated with the series it usually follows the arthritis, but may be associated with it or even precede it. The author thinks that the evidence does not warrant the conclusion that chorea is invariably of rheumatic origin, but says of it and of the rest of the series, except subcutaneous nodules, that they are sometimes produced by other causes as well as rheumatism.

The number of cases of chorea arising from other neuroses is small.

Nervous shock plays an important part even in rheumatic cases.

There is nothing antagonistic between nervous shock and rheumatism. Fright chorea and rheumatic chorea are not distinct. Fright acts equally on rheumatic and non-rheumatic. As to the question of constancy of connection between chorea and rheumatism, attention is called to the greater proclivity of girls, between ten and fifteen years, to acute articular rheumatism compared with boys of the same age. This is true of chorea.

Chorea is found associated with other conditions which are in close relation to articular rheumatism,—such as pericarditis and endocarditis and nodules.

Some rheumatic connection can be traced in a large number of cases, either direct or hereditary.

The evolution of the *subcutaneous nodules* is another one of the series. These fibrous nodules are common in children. These are often felt rather than seen. Sometimes they are no larger than a hempseed. They lie under the skin and are connected with fasciæ or tendons in relation with fibrous tissues. They are not tender except in rare cases. There is no redness over them except occasionally from friction. They are found most commonly on the back of the elbow, over the malleoli, and at the margin of the patella. They are not infrequent upon the head, and now and then upon the extensor and flexor surface of the hand, extensors of the feet, vertebral spines, the spine of the scapula, and crests of the ilii. There may be only one nodule or many, and these may vary in size from a pin-head to that of an almond.

Their duration varies from a few days to several months. The evolution of the nodules gives rise to no pain or fever. Microscopically these bodies consist of nuclear growth in

process of development into fibrous tissue in all stages of transformation. The author believes that the connection of these nodules with rheumatism is extremely close and absolute; and, further, they are specially connected with the graver forms. When they are present the prognosis is grave.

*Pleurisy* is another of the series. It may arise from mechanical congestion or from extension. Pleurisy is not so constantly a rheumatic affection as others of the series. Attention is called to it as a point which deserves further investigation.

*Pericarditis* is admitted into the rheumatic series without question. It may appear at any point in the rheumatic procession of events. The author believes it undisputed that inflammation of the pericardium owns rheumatism as its most common cause. The pericarditis in children usually occurs insidiously. The classical signs are largely modified and sometimes are wanting. A rapid pulse, anæmia, and the appearance and disappearance from time to time of the pericardial rub are characteristic. The pericardium grows thicker and the heart more bulky, and the patient dies without dyspnoea or dropsy.

Fibrous nodules in various places often accompany the pericarditis. The development of nodules often marks the progress of intractable pericarditis.

Rheumatic pericarditis in early life may be subacute, persistent, recurrent, and progressive. The inflamed membrane does not exude serum, but lymph. Fibrous tissue is developed, sometimes enormously.

The subcutaneous fibrous nodules are so frequently associated with pericarditis that it would seem as if the same virus which stirs up the inflammatory change in the fibrous tissues of sheaths and tendons stirs up in the same way the fibrous organization of lymph or proliferation of the fibrous tissue of the pericardium. In fact, nodules are sometimes seen in the pericardium. The pericardium may become so thick and firm as to constrict the heart and cause a disproportion between heart-growth and development of the rest of the body.

*Endocarditis.*—The position of this one of the series of rheumatic troubles is established and allowed. It may occur at any period of the rheumatic procession of events. Usually it comes early and occurs later.

With children it is often a slow and trivial attack,—yet occurring and persisting until the injury to the valve becomes serious.

Contrary to the form so often seen in adults it is subacute, insidious, progressive.

Children are nearly twice as liable to cardiac inflammation



as adults. But valvular disease of the heart in childhood is not always rheumatic. It may be congenital or follow a specific fever or accompany septic or uræmic poison. Three classes remain: (1) Those cases of heart-disease, directly traceable to rheumatism; (2) those associated with chorea; and (3) the unexplained.

In the judgment of the author, most of the cases associated with chorea are rheumatic.

The evidence in favor of this is strong. It is carefully brought out in this paper.

The unexplained cases dwindle to an insignificant number when carefully examined for antecedent rheumatic trouble. Subcutaneous nodules are associated with grave progressive endocarditis as closely as with progressive pericarditis.

The inflammatory process in the valves appears to be identical with that met with in the nodules.

The chief change in the valve is the proliferation of fibrous tissue, which is the leading feature of the morbid process seen in the nodule.

Looking at the affection of the fibrous tissues of the joints, of the subcutaneous fasciæ, of tendons, of the pericardium, and of the endocardium, it appears that the *materia morbi* of rheumatism, whatever its nature, sets up similar irritant changes in fibrous tissues in all these parts. In early life it appears that the fibrous tissue of subcutaneous fasciæ of tendons, of pericardium, and of endocardium are far more sensitive than in later life. The joint fibrous tissues are less susceptible in early life.

Hypertrophy and dilatation following valvular lesions proceed more rapidly in children than in adults.

*Scarlatinal rheumatism*.—In the course of scarlet fever articular inflammation appears now and again in such a way that it cannot be distinguished from articular rheumatism.

This interesting feature is well discussed in the original paper.

*Treatment*.—Almost the whole interest and importance of rheumatism in children centres in the cardiac inflammation and its results. The one great aim and object of treatment should be to minimize this danger. Heroic treatment is un-called for.

**Tonsillitis: Its Varieties and Relation to Rheumatism.**  
(*British Medical Journal*, September 14, 1889.)

I. C. W. HAIG-BROWN.—Tonsillitis may be variously classified as simple or specific, the latter being divisible into exanthematous and diphtheritic, or acute, subacute, and mild; or as

follicular and interstitial. In all cases the whole tonsil is involved, the follicles being in some instances most affected, in others the interstitial tissue. The difference between the two is not, however, one of degree alone. In the following remarks the more common form, follicular tonsillitis, will alone be considered.

It occurs under two opposite conditions of climate. One when the atmosphere is saturated with moisture and the wind is from the northeast; the other when there have been several successive hot and dry days with northeasterly breeze, but with the humidity of the air about 80, and of course no fog. These are also the conditions which favor the development of rheumatism. Another causative relation which the two diseases appear to have in common is their liability to arise under septic influences. It is well established that tonsillitis may arise from various drain-poisons, and the author believes that the same is true of rheumatism. In a large institution the throat cases made up twenty-one per cent. of the sick list, and the rheumatic four per cent. The drainage-system was thoroughly repaired, when the throat cases at once fell to five per cent. and the rheumatism to one per cent.

In seventy-six cases of tonsillitis in educated people a positive history was obtained. In thirty-eight there had been previous attacks of rheumatism, in twenty-eight rheumatoid fevers accompanied the attack, ten had never themselves had rheumatism, but one or both parents had.

The author believes that tonsillitis bears a causative relation to endocarditis, and has seen two cases, each complicated by endocarditis, followed by a permanently damaged heart. He has never seen it followed by chorea nor iritis. He has not found the treatment usually employed for rheumatism of especial value in tonsillitis. He employs salicylates because of their sedative properties, but the disease pursues about the same course under any treatment.

From study of the disease we are led to one of the following conclusions:

1. Rheumatism is a general disease which may find expression in the throat as well as in the serous or fibrous tissues.
2. The inflamed tonsil is the receptacle for the rheumatic poison, from which it is conducted into the general circulation.
3. Specific germs find their way into the body and evince their presence in inflammation of the tonsils and the fibrous and serous membranes.

This last view is probably the most nearly correct. The same condition exists in scarlatina, small-pox, and diphtheria.

The sudden onset, high fever, intense affection of the whole system, and critical fall of temperature all point to the disease as a specific febrile disorder.

II. A. E. GARROD.—The question at once arises, whether mere articular pains are correctly described as rheumatic symptoms. They probably are, but only those pains which can be distinctly localized in the joints should be so classed. If it can be established that endocarditis develops during the course of a tonsillitis it is a powerful argument in favor of its rheumatic origin. At present, however, the evidence upon this point is not convincing.

Of one hundred and thirty-six patients suffering with sore throat, eighty-two had tonsillitis, of whom twenty-one, or about one-fourth, gave histories of rheumatic fever in near relations. Of fifty-four with pharyngitis, twenty, or more than one-third, give similar histories. Among non-rheumatic patients the proportion was about one-fifth.

TABLE OF CASES OF PHARYNGITIS AND TONSILLITIS IN WHICH THERE WERE RHEUMATIC FAMILY AND PERSONAL HISTORIES.

	TONSILLITIS.			PHARYNGITIS.			Total.
	Family History of Rheumatic Fever.	Family History of Rheumatism.	No Rheumatic Family History.	Family History of Rheumatic Fever.	Family History of Rheumatism.	No Rheumatic Family History.	
Coincident acute or subacute articular rheumatism.....	...	...	1	...	...	...	1
History of past rheumatic fever, coincident articular pains .....	1	...	1	1	...	1	4
Coincident articular pains.....	4	1	9	9	...	2	25
Cases in children with rheumatic manifestations.....	...	...	2	...	...	...	2
Coincident erythema.....	1	...	...	1	...	...	2
History of past rheumatic fever .....	2	...	4	2	...	...	8
History of past joint-pains (not reckoned as rheumatic).....	1	...	2	...	1	4	8
Cases with no personal rheumatic history.....	11	5	...	7	...	...	23

In one case tonsillitis preceded articular rheumatism, in three it was associated with definite rheumatic symptoms, and



in two with erythema only. Tonsillitis was associated with a personal rheumatic history in twenty-six cases, pharyngitis with sixteen. If the cases giving a family history only are added to these, we have forty-two cases of tonsillitis (41.17 per cent.) and twenty-three of pharyngitis (34.32 per cent.).

In one hundred and sixty-eight cases, definite valvular disease of the heart was present in six, in all of which rheumatic symptoms were present. In two other cases murmurs not certainly organic were heard.

Conclusions are as follows :

1. Both tonsillitis and pharyngitis are sometimes manifestations of rheumatism.

2. Some evidence of a rheumatic origin is obtained in about one-third of the cases which come under treatment for sore throat.

3. It is possible that rheumatism may occur as a complication of infectious sore throat, just as it frequently occurs as a complication of scarlatina; but it is probable that in many cases apparently of this kind the throat-affection is really abortive scarlatina.

4. True articular pains occurring in association with sore throat afford evidence of a rheumatic origin.

5. When sore throat is the leading feature of the attack, there is comparatively little tendency to affection of the endocardium or pericardium.

III. Lennox Browne adheres to the view he had eighteen years ago expressed that a rheumatic, or, to speak more correctly, a gouty-rheumatic diathesis is an etiological factor of great importance in a majority of patients subject to recurrent tonsillitis. He does not recognize many varieties, for except superficial erythema and peritonsillitis, other disorders are of degree rather than of kind. Further, all methods of treatment, of which salicylate of soda is the most efficient, prove the rheumatic association. He is opposed to scarification of an inflamed tonsil unless pus is clearly established.

IV. R. HINGSTON FÖX.—The essay of this author is arranged in a series of propositions.

1. The tonsils are inflamed in the course of several specific fevers, and a membranous deposit is formed upon their surface. This is especially true of diphtheria and scarlet fever.

2. Tonsillitis may be classed under two general forms. *a.* Epidemic sore throat, comprising irregular disorders appearing in the presence of bad hygienic conditions, and approaching in severe cases diphtheria, in others scarlatina, while in

others bowel symptoms may be present as acute inflammation of the joints. *b.* Simple tonsillitis, so-called follicular. No clear line of demarkation can be drawn between these various forms.

3. In acute rheumatism the tonsils are often inflamed, as a rule, early in the attack. Joint-pains also occur with tonsillitis, but we must distinguish between acute rheumatism and acute arthritic symptoms, which may or may not have connection with that disease.

4. True quinsy is a distinct affection from simple tonsillitis, and commonly follows muscular fatigue or nervous exhaustion.

5. Tonsillitis, of whatever kind, runs a short course. It affects chiefly children and adolescents of either sex without much distinction of condition.

6. Unlike many specific fevers, tonsillitis is extremely prone to recur in the same individual.

From the foregoing facts the following deductions may be drawn :

1. Evidence justifies us in associating together as allied diseases the following group : Scarlatina, diphtheria, enteric fever, the forms of tonsillar inflammation classed under epidemic sore throat, and simple tonsillitis, and, lastly, acute rheumatism. This might be styled the "lympho-rheumatic" group of diseases, having some of the following features in common : Acute lesions of the tonsil or of other lymphatic organs of the digestive tract, arthritis, inflammation of endocardium and pericardium, and of serous cavities. In all but rheumatism the course of the disease is fairly definite. It is common, even in simple tonsillitis, to find some signs of cardiac disturbance. The second sound is markedly accentuated, and both sounds are generally reduplicated.

2. There are no grounds as yet upon which to base any hypothesis as to the essential nature of the morbid processes in this group of diseases. It is clear, however, that the lymphatic system with which the tonsils, ileo-cæcal glands, serous cavities, and perhaps the joints, are connected are especially concerned.

3. Evidence does not at present justify the inclusion of true quinsy in this group of associated diseases.

Young: On a Case of Hæmatophilia. (*Lancet*, November 9, 1889.)

This case illustrates a few of the generally recognized facts in the causation of this diathesis. The child was suffering from hemorrhage from the gum. The blood issued from a minute point just above two recently-cut upper incisor teeth.

Over the child's body were marks of various sizes, produced by contusions which had been followed by large extravasations of blood.

The family history was as follows:

The child's mother belonged to a family of bleeders, but neither she nor her mother had at any time suffered in that way. One brother died from hemorrhage from having his finger caught in a door. Another brother died from hemorrhage following the extraction of a tooth.

Two brothers of the grandmother of the child died from bleeding, which resulted from similar trivial causes. It is to be noted that all the persons afflicted were of the male sex.

Treves, W. Knight: *Diagnosis and Treatment of Scrofulous Glands*. (*Lancet*, October 5, 1889.)

The first indication in local treatment is to remove all sources of irritation. Partial operation is condemned. Nothing can effect this complete removal except the knife. Scraping is useful in limited superficial gland enlargements and in old fistulous tracts.

If the skin is blue-sodden, undermined, and thin, it is better to cut or scrape it away.

The question of early or late removal can only be answered by the consideration of the special features of each particular case. As a rule, early removal is advantageous.

This paper is concluded by a discussion of the sound surgical principles upon which the operation for excision of the scrofulous glands rests.

Irvine: *Two Cases of Scarlatinal Nephritis complicated by Meningitis: Necropsy*. (*Lancet*, August 24, 1889.)

One, five years of age, had had scarlet fever five weeks previously. Four weeks from the beginning of his fever he had a convulsion, followed by frequent vomiting, rapid breathing, pallor, slight œdema of the feet, and mild bronchitis. Urine contained albumen. A week later pneumonia and otorrhœa developed.

Later, there developed delirium, high temperature, stupor, convulsions, and coma.

Necropsy showed fluid in pericardial sac and ventricles of the heart dilated. The right upper lobe in red hepatization.

The membranes of the brain were congested and slightly adherent along the longitudinal sinus, where recent lymph had been thrown out. The brain substance was soft and œdematous.



The other case was also five years old, desquamation was going on about the hands and feet; at the time of admission, three weeks after the fever began, there was general anasarca, ascites, pulmonary œdema, and pleural dropsy. Urine scanty; traces of albumen were present. Treatment was followed by improvement for eight days. Then, rather suddenly, she became dull or restless and delirious, and later unconscious, remaining so until death.

Convulsions appeared impending several times, but were warded off by bathing, free purgation, and nitroglycerin.

The necropsy revealed a condition of the brain and membranes almost identical with the previous case, the amount of lymph thrown out towards the middle of the longitudinal sinus being in excess of that then seen.

How far the latter symptoms were due to uræmia and how far to meningitis is not easily determinable.

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### III.—SURGERY.

Allen, D. P.: *Litholapaxy in Children*. (*Journ. Am. Med. Assoc.*, 1889, xiii. 483.)

He concluded that beyond question the operation of litholapaxy in children is one that must be recognized. It is particularly suited to medium- and small-sized stones, and though median and lateral lithotomy are very successful in such cases, we believe litholapaxy will be equally so in skilled hands, and that, besides safety, it has the great advantage of absence of cutting and of the filthy condition of the patient. Suffering is commonly very slight, and is confined to a few days, and it is not infrequent for patients to be up and around on the third or fourth day. Patients will not hesitate so long before the crushing as the cutting operation, and should the return of the stone be more frequent after crushing than after cutting,—as is by no means shown to be the case,—a second operation will be more easily performed than the first, on account of the size of the urethra increasing with the age of the patient. The condition of a boy's bladder is certainly more likely to be favorable to litholapaxy than that of an adult. Large and hard stones should be removed by the suprapubic operation, especially if it is desirable to see the interior of the bladder. Medium and small stones are favorable for removal by litholapaxy, unless for some reason the urethra be smaller than normal. The operation of medium lithotomy is a favorable one in cases of small stones, but an operator

skilled in litholapaxy would do well to choose the latter. In cases of medium-sized stone, with a urethra not sufficiently large for the introduction of proper instruments for crushing, lateral lithotomy is indicated.

Eliot, L.: *Umbilical Hemorrhage: Its Treatment.* (*Med. and Surg. Rep.*, Phila., 1889, lxi. 659.)

The writer gives references to two hundred and sixty-one cases. After enumerating the usual methods employed to check the hemorrhage, he suggests a new one, which seems to be very efficient. This treatment is to perform a laparotomy and pass a ligature about the cord before its exit from the abdomen. He reports one case in which this method was employed. The child died thirty-eight hours after the operation, although there was no return of the bleeding.

Cheatham, W.: *Intubation.* (*Am. Pract. and News*, Louisville, 1889, viii. 390.)

The writer reports five additional cases, with three recoveries, making a total of thirty-two cases, with ten recoveries. In his first series of fifteen cases he had but one success.

Waxham, F. E.: *Foreign Bodies in the Larynx.* (*Peoria Med. Month.*, 1889, x. 249.)

He reports the case of a nursing infant, fifteen months old, from whose larynx were removed by means of tracheotomy two vertebræ of a fish, one of them having two projecting spines. An O'Dwyer intubation tube was inserted and the opening into the trachea closed. This was removed in three days, but two days later it became necessary to reinsert it. On the fourth day it was ejected, and the child made a perfect recovery.

Cabot, A. T.: *Bony Anchylosis of the Temporo-Maxillary Joint relieved by Osteotomy of the Neck of the Inferior Maxilla.* (*Annals Surg.*, 1889, x. 426.)

The writer reports three cases with excellent results:

CASE I.—When two years of age, she had scarlet fever, which was followed by abscesses on the left side of the neck, close to the angle of the jaw. From the time that the swelling from these went down the jaw had been immovable. She was thirteen years old when the operation was done. The result was excellent. The motions of the jaw were perfect, and although there was a slight loss of power at first over the eyelid, this had almost wholly disappeared when seen many months later.

CASE II.—This was a similar case, which followed scarlet fever when four years of age. She was seventeen years old when the operation was done. Good motion was obtained, with a power of separation of about one and a half inches. In this case, too, there was slight interference with the motions of the eyelid, which finally disappeared.

CASE III.—Followed an injury when three and a half years old. She was thirty years old when operated upon. The result was that the jaws can be easily separated for an inch. Owing to the stretching of the facial nerve there was at first a good deal of paralysis, which rapidly improved, although the left eyelid does not yet move as promptly as the other.

Wharton, H. R.: Prolapse of the Rectum in Children. (*Univer. Med. Mag.*, Phila., 1889, ii. 144.)

In persistent cases he advises that the whole of the mucous surface of the exposed gut be painted with nitric acid, care being taken not to allow the acid to come in contact with the skin adjacent to the verge of the anus. The surface of the cauterized mucous membrane is then coated with olive oil or vaseline and the gut replaced.

Abercrombie: Myxœdema in a Child. (*N. Y. Med. Journ.*, 1889, i. 688.)

At a meeting of the Clinical Society (London), Dr. Abercrombie showed a girl of fifteen with myxœdema. The child was quite healthy until about fifteen years of age, and she then had an illness which lasted for three years, for which she kept her bed nearly the whole of that time. What the symptoms were the mother could not say, but nothing referable to the throat was noticed during the illness. Since then, the mother stated, the child had not grown, and had deteriorated mentally, and, from being quick at her lessons, could now learn nothing, and had a very indifferent memory. The mother was most positive that before this illness the child's intellect had been good, and that she had had pretty features and soft, silky hair. The child was very stunted, but thick-set, of about the height of a child of nine. Her face was decidedly puffy, especially under the eyes, and her complexion was quite characteristic of myxœdema. The isthmus of the thyroid could not be felt, but the rings of the trachea were easily palpated. Her hands were square and spade-like, and her skin was rough and her hair coarse. It was presumed that the primary illness was some inflammatory condition of the thyroid gland, leading to its atrophy.



Meltzer, S. J.: Intubation in Cases of Foreign Bodies in the Air-Passages, with Remarks Concerning Feeding after Intubation. (*N. Y. Med. Rec.*, 1889, xxxvi. 311.)

He reports a successful case in which the foreign body was a comparatively large, pointed piece of a nut-shell. At the time of operation the child lay comatose, its face intensely cyanotic, pulse very feeble, frequent, and intermittent. In feeding, after intubation, he suggests the use of a soft catheter (silk or rubber) to be introduced into the stomach through the nose and left there permanently.

Row, E. W.: Grain of Corn in the Windpipe. (*Virg. Med. Month.*, 1889, xvi. 640.)

The patient was a boy, four years of age. After giving chloroform, tracheotomy was successfully performed, a large grain of corn taken out of the trachea, and the patient made a rapid recovery. The writer refers to a similar case, in which operative interference was not permitted by the family, yet he continued to live, although reduced to a skeleton and in daily expectation of death. He finally made a good recovery, abscesses having formed and ruptured into the bronchus, washing out the grain of corn.

Shaffer, N. M.: On the Principles of the Mechanical Treatment of Hip-Joint Disease. (*N. Y. Med. Journ.*, 1889, l. 566.)

He says that he cannot avoid the conclusion that we should use traction as a means of relieving the self-imposed muscular traumatism of the joint, not only to meet the very evident general mechanical conditions, but to relieve the muscles as well. The muscles were long ago tired out before the painful stage appeared, and we should appreciate the constant strain the muscular tension imposes upon the central nervous system. We should rest the joint by giving it immunity from the traumatism of inter-articular pressure and then await the gradual yielding of the muscles. This will soon permit us to place the distal part of the joint in the desired position, and we need not inflict the slightest injury to the joint if we proceed carefully. I am quite sure that this object can be secured by the intelligent use of traction and counter-traction.

The objections to any form of apparatus which embodies the principle of the lever alone are very great. It seems to me that this principle as applied to the treatment of tubercular joint-disease, in the light of the pathology of the disease, in the light of the muscular conditions which accompany it, and the unerring certainty with which the lever aggravates the already existing traumatism, is crude and unscientific.

## Bibliography.

### CYCLOPÆDIA OF THE DISEASES OF CHILDREN.

#### Volume III.

EDITED BY JOHN M. KEATING, M.D.

(J. B. Lippincott Company, Publishers.)

The following are the articles contained in the volume:

1. Functional Disorders of the Stomach. By William Pepper, M.D., LL.D.
2. The Diarrhoeal Diseases, Acute and Chronic. By L. Emmett Holt, M.D.
3. Membranous Enteritis. By William A. Edwards, M.D.
4. Intestinal Bacteria of Children. By William D. Booker, M.D.
5. Acute and Chronic Constipation. By Charles Warrington Earle, M.D.
6. Tabes Mesenterica. By A. Jacobi, M.D.
7. Parasites of the Intestinal Canal. By W. T. Councilman, M.D.
8. Hernia in Children. By Wm. J. Taylor, M.D.
9. Intestinal Obstruction in Children. By W. W. Keen, M.D.
10. Peritonitis. By Henry Ashby, M.D., M.R.C.P.
11. Perityphlitis, Paratyphlytis, and Perityphlitic Abscess. By Christian Fenger, M.D.
12. Congenital Abnormalities of the Intestine,—Malformations, Injuries, and Diseases of the Rectum and Anus. By Henry R. Wharton, M.D.
13. Colotomy. By John H. Packard, M.D.
14. Diseases of the Pancreas and their Operative Treatment. By N. Senn, M.D.
15. Functional Disorders of the Liver, Jaundice, and Diseases of the Ducts and of the Portal Vein. By Henry Dwight Chapin, M.D.
16. Contractions of the Liver (Cirrhosis, etc.). By Marcus P. Hatfield, M.D.
17. Anomalies of the Kidney. By George B. Fowler, M.D.
18. Albuminuria in Children. By James Tyson, M.D.
19. Acute and Chronic Bright's Disease. By James F. Goodhart, M.D., F.R.C.P.
20. Surgical Diseases of the Kidney. By Henry Morris, M.D., F.R.C.P.
21. Enuresis,—Incontinence of Urine. By A. Jacobi, M.D.
22. Vesical, Urethral, and Preputial Calculi. By William Hunt, M.D.
23. Malformations of the Penis, Urethra, and Bladder. By De Forest Willard, M.D.
24. Diseases of the Umbilicus. By William Lee, M.D.
25. Diseases of the Testes and Penis. By F. R. Sturgis, M.D.

26. Diseases of the Uterus, Vagina, and Vulva. By John M. Keating, M.D.
27. Diseases of the Ovaries and Tubes. By Howard A. Kelly, M.D.
28. Abnormalities of the Female Genital Organs and Mammary Glands, By Clara Marshall, M.D.
29. Diseases of the Blood and Blood-making Apparatus. By J. P. Crozer Griffith, M.D.
30. Minor Surgery and Emergencies in Children. By Charles W. Dulles, M.D.
31. Plastic Surgery. By Thomas G. Morton, M.D.
32. Wounds. By James McCann, M.D.
33. Anæsthetics and Anæsthesia. By Oscar H. Allis, M.D.
34. Congenital Dislocations. By Drs. Samuel Ketch and Le Roy W. Hubbard.
35. Club-Foot. By Drs. E. H. Bradford and E. G. Brackett.
36. Torticollis. By Drs. E. H. Bradford and E. G. Brackett.
37. Acute Inflammation of Bone. By William Macewen, M.D.
38. Lateral and Functional Curvatures of the Spine. By V. P. Gibney, M.D.
39. Pott's Disease. By A. Sydney Roberts, M.D.
40. Fractures and Dislocations. By J. H. Packard, M.D.
41. Synovitis,—Arthro-Meningitis. By A. J. Steele, M.D.
42. Diseases of the Major Articulations. By Charles T. Poore, M.D.
43. Diseases of the Minor Articulations. By A. J. Steele, M.D.
44. Ankylosis. By R. A. Kinlock, M.D.
45. Deformities of Bone, Osteoclasia and Osteotomy. By A. G. Gerster, M.D.
46. Mechanical Treatment of Deformities of Infantile Paralysis. By E. G. Brackett, M.D.
47. Amputations. By Wm. Barton Hopkins, M.D.

From this noteworthy third volume we get an overlook of the comprehensiveness of the design and the greatness of the task undertaken by Dr. Keating and his associates, and also of the thoroughness and efficiency of the result, now rounding itself out towards completion. We have here thirteen hundred and seventy-one pages,—several hundred more than is contained in either of the preceding volumes, and a glance at the detailed list of articles given above shows that the great importance of the subject certainly justifies the greater space allowed. In the noted names of the contributors we also find evidence that subject and master are worthily matched.

Even if all the room desired by a reviewer were at his disposal, extended analysis or criticism of each article would be hypercriticism, if not impertinence. Few or none have the requisite encyclopædic knowledge for such an undertaking, and the few slight oversights and errors, whether of omission or commission, that strike one in a hasty turning of the leaves cannot mar the general excellence of this superb body of compact knowledge considered as a whole.



One of the inevitable vexations of an editor of such a large work has not missed its happening here. At a late hour Dr. Griffith magnanimously consented to write the article on Diseases of the Blood and Blood-making Organs, but the unavoidable failure of a previous colleague necessitated the inclusion of the treatise out of its logical order and in the present volume. But in view of the exceptional excellence of Dr. Griffith's work this becomes somewhat less regrettable. A single point may be alluded to, and this by extension applies to other parts of the work,—an unpardonable redundancy of foot-note references. Not one in a thousand readers will ever desire or care to verify a single reference, and for that possible one the reference is comparatively useless, because he will be a master of the subject. We may, as in the present case, be perfectly sure that it is not for the purpose of displaying erudition, but is, on the contrary, a guarantee of good faith and studious care. We bring the matter up only to ask if it would not be better if a chief editor should instruct his staff to pursue a common plan, whereby better unity is given a composite work by all pursuing a common method. In this way there is not only saved much valuable space now wasted, but the reader's attention is not distracted and the solidity of the page not marred. Bibliographies may and should be added to an article, but an author's name should be sufficient guarantee that his statements are based upon knowledge of the best authorities, without wearying iteration of specific and useless references. The author of the article on Fractures and Dislocations sins in a like manner.

An exceptional attractiveness and scientific interest is loaned the present volume by the excellent illustrations, those of Holt, giving striking photographs of ulcerous and inflammatory conditions of the colon, ileum, etc., being especially fine.

Dr. Pepper's capital article, with which the volume opens, is a worthy introduction. In it we gladly note the evidence of an aim that has manifestly inspired the labors of most of the contributors,—Practicality. There is no doubt of the fact that the distinguished author draws his conclusions from a rich experience, that he makes these conclusions clear to the mind of younger and less experienced practitioners, and that when the latter go to their teacher for help they are not deftly turned away with vague hints and glittering generalities, but get definite and clear-cut advice and helpfulness, even down to the details of prescriptions and dosage.

But we cannot forbear mention of one factor, not only omitted in the present case, but too generally neglected in the consideration of the etiology of functional gastric disorders. This is the influence of eye-strain and school-pressure. Not a word is written herein, and also not a word in the discussion of anæmias, as to these baneful elements, and yet to every ophthalmologist and unprejudiced observer these things often are patently and frequently the underlying and primary causes of anorexia and malassimilation, with consequent functional gastric and intestinal disorders of various kinds, with headache, nervousness, night-terrors, etc. To refuse much longer to admit these things as etiological factors,

with the derived lessons as to prophylaxis and treatment, is fast becoming either reprehensible ignorance or culpable obstinacy.

As regards the diarrhœal diseases, Dr. Holt concludes that despite the common ascription of them to bacteria, "there is yet wanting sufficient evidence to establish the fact that any form of bacteria thus far investigated bears a causative relation to any of the varieties of diarrhœal disease in children." In these bacteriomania days such a sane conservatism seems both noteworthy and praiseworthy. And yet the conclusion, somewhat illogically reached, it would seem, is that "in the intestinal disorders of infancy we are concerned most of all with the development of abnormal bacteria, but that before this takes place there is in almost all cases a failure of complete digestion and perfect absorption." As to treatment and prophylaxis, Dr. Holt's advice should be studied by every general practitioner, because it is detailed, practical, and certainly excellent.

Professor Keen's valuable table of the differential diagnosis between foreign bodies, volvulus, intussusception, and constrictions in intestinal obstruction is an instance of the careful and exact thoroughness that always distinguishes this teacher's work, and will prove serviceable to the busy young surgeon.

We notice, and with gratification, that among Dr. Dulles's sensible councils there is a wise plea for the frequent retention of scabs,—“Nature's method of protecting wounds.”

Few articles are of more practical value than the clear and concise advice by Dr. Allis on Anæsthetics and Anæsthesia.

We doubt if most orthopædic surgeons will assent to the statement of the authors concerning Club-Foot, that tenotomy is one of the simplest and least weighty factors in the treatment. It would seem that usually it is neither simple in its execution nor in its bearings upon the deformity. Simple division of the tendo Achillis is sometimes inoperative and its effect *nil*. We are not told why this is so, and why the heel frequently fails to come down. Such failure has been known to induce some operators who had not mastered the anatomy and surgery of the ankle-joint to remove the astragalus.

In Dr. Chapin's fine article upon the Liver the differential diagnosis between pleural effusion and enlargement of the liver (p. 427) is especially worthy of commendation; and there will hardly be found in all literature a so praiseworthy exposition as here of the subject of abscess of the liver, with its most valuable table of cases.

From Dr. Hatfield's hardly less noteworthy article upon Contractions of the Liver we learn that there have been one hundred and fifty-six cases of cirrhosis in children reported, so that the common statements of its extreme rarity are exaggerated.

But when there is so much calling for mention and praise the task becomes superfluous or tiresome. The reputation established by previous volumes is in the present ably sustained, until the conviction is deepened that no general practitioner who aims to keep abreast of scientific medical progress can afford to do without this epoch-making work.

G. M. G.

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Original Communications.

ON OBSCURE FEBRILE ATTACKS IN THE  
COURSE OF CHOREA, REFERABLE TO EN-  
DOCARDITIS.

BY JAMES FINLAYSON, M.D.,

Physician to the Glasgow Western Infirmary and to the Royal Hospital for Sick  
Children, Glasgow; Honorary Librarian to the Faculty of Physicians and Sur-  
geons, Glasgow, etc.

ABOUT twenty years ago, while studying the diagnostic sig-  
nificance of pyrexia appearing without any obvious explana-  
tion, as an important indication of latent tubercular disease, I  
was led to remark on the occasional occurrence of short febrile  
attacks of this kind in the course of chorea.\* Since then I  
have repeatedly observed and watched for such complications  
in ordinary cases of chorea; but I remained for a long time  
without any theory of their causation: usually the attacks  
have run their course without leaving any evidence on which  
to found an opinion.

In 1884-85 a case occurred in the Glasgow Western In-  
firmary which suggested endocarditis as an explanation. Very  
possibly others have recognized these attacks as due to this

\* See a foot-note to a paper on the "Temperature of Children in  
Phthisis and Tuberculosis," *Glasgow Medical Journal*, November, 1869.  
This is quoted by the translator of Wunderlich, "On the Temperature in  
Diseases," London, 1871, p. 426.



cause; but the symptoms are often so slight in their suggestiveness in this direction that probably many, like myself, have frequently failed to recognize their cardiac origin.

The child referred to (H. A.) was a girl seven years old, admitted on November 28, 1884, with chorea of the left arm and leg chiefly, of seven weeks' duration. She had on admission a systolic murmur, heard best at the apex, but there was no history of rheumatism in the child; a paternal aunt, however, had had rheumatism.

The child went on improving nicely as regards the chorea, but on December 14 the temperature rose from 98.6° F. in the morning to 100° F. at night; next day it remained about 100° F., but on the 16th it rose to 103° F. at night; for the next three days it remained high; for other two days it was slightly elevated at night, and then it became normal; that is to say, for five or six days there was moderately high fever without any obvious cause in particular. No rheumatic complications occurred, and nothing on physical examination of the chest could be made out beyond the murmur present on admission. Indeed, so obscure was the case that the rise of temperature was feared at the time to be due to some infectious disease supervening in the child.

In the course of February the temperature rose again, and in this attack the idea of endocarditis was forced on the attention, not only by the quick pulse, but by the rapid respiration, without pulmonary complications. The temperature from February 20 to 24 ranged from 100.4° to 103.4° F. in the morning to 102° to 105.2° F. in the evening; usually, indeed, the higher levels were maintained. The pulse, usually about 120 or 130 at first, reached 160 on the 24th. The respirations, usually 60 to 70 per minute, reached 80 to 84 on the 24th. The child died on the 25th. This terminal attack of high temperature, quick pulse, and extremely rapid respiration occurring in a case of chorea, without any local manifestations of disease, seemed to me to point conclusively to endocarditis. As a matter of curiosity, I asked one or two medical friends, who happened to visit the ward, to examine the child, to see if this idea occurred to them; but on being told that the cardiac murmur was there on admission, they seemed to dismiss from

their minds the idea of endocarditis as a cause of the disturbance and to feel that the pyrexia was rather inexplicable.

At the post-mortem examination it was noted that the pericardium contained a small quantity of turbid fluid, and that there was a very slight fibrinous exudation on the surface of the left auricle. The left ventricle was somewhat enlarged and dilated. The auricular margin of the mitral curtain was lined with a scanty deposit of recent warty vegetations. The same condition, but less marked, was found along the margins of the tricuspid curtains. In the lungs there was only hypostatic congestion.

In view of the post-mortem examination, it seems clear that not only was the terminal pyrexia due to endocarditis, but that the attack in December was due to the same cause. If the cardiac murmur in this case had become developed *after* the febrile paroxysms were observed, or even if it had become notably altered in quality thereafter, every one would naturally have thought of endocarditis as the cause. It must be constantly borne in mind, however, that valvular murmurs, as such, are not evidences of active endocarditis, although such murmurs, no doubt, are often, or indeed usually, dependent on the *results* of this inflammation. We all know that endocarditis may exist even as a fatal disease without any valvular murmur at all, and that it may occur in cases already complicated with valvular murmurs, due to old endocarditis, without any new feature being added to the murmur.

I may say that I am one of those who hold strongly the close relationship between rheumatism and chorea. In my experience, cases of chorea, labelled as non-rheumatic, have repeatedly declared themselves subsequently, in one way or another, as clearly rheumatic in character. In the case just detailed there can be little doubt that the inflammatory affection in the heart was of a rheumatic nature. The frequent vagueness of rheumatic manifestations in childhood has been generally admitted.

Some of these remarks are confirmed by the facts in the following case. Mary R. was first admitted to the Children's Hospital, under my care, on February 11, 1884. She was then eight years old. She was affected with chorea of an ordi-

nary type. There was a systolic murmur at the apex on admission, evidently of valvular origin. No rheumatic history, either family or personal, could be made out. On February 20 the temperature, previously very normal, reached 100° F. at night; next night it was 102° F. From February 21 to 28 it oscillated from about 100° to 102° F. and then came down to the normal. The note in the ward journal on February 29 says, "The temperature has been high at night for the last few times, but the child does not seem any worse. The movements are almost gone." The child recovered from the chorea quite completely. On December 17, 1885, however, she was readmitted with a similar attack. This attack was preceded by "pains all over the body, most marked in the shoulders and knees, but with this exception there is no history of rheumatism." The systolic murmur, of course, was still present. On December 21 an attack of pyrexia supervened, the temperature rising up to between 102° and 103° F. at nights. The feverishness lasted from December 21 to 27, and the decline was gradual. Meanwhile, the choreic movements had not improved. No explanation could be found for the pyrexia except that the systolic murmur seemed to become more apparent, and that the pulse assumed the "rhythmical irregularity" termed "bigeminous," as shown in the tracing. (See chart and tracing on opposite page.)

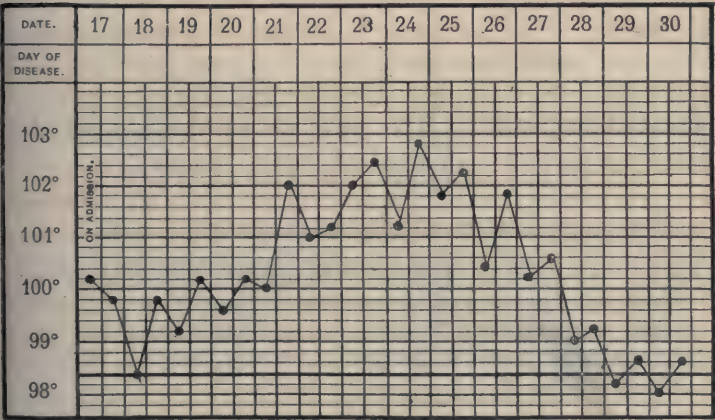
A second short rise in temperature occurred in this case, lasting from January 3 to 6, the maximum reached being 103° F. A third pyrexial period lasted from January 21 to 30, the evening temperature reaching usually about 102° F. In neither of these two attacks did the pulse assume the bigeminous character, and no new light was thrown on the case; no new developments in the murmur supervened. She was dismissed on March 8, practically well. The child was kept strictly in bed during the pyrexial periods, in view of their probable dependence on endocarditis.

Although I could narrate some further cases, it is scarcely worth while giving any more, unless their symptoms or sequelæ could throw light on the nature of the attacks. The following extract, however, shows how obscure the pyrexia seemed in a case of this class at the time. A child (R. M.)



was admitted on March 1, 1883, to the Children's Hospital with chorea. On March 31 and April 2 the temperature ran up to 102° and 103½° F., with a pulse-rate of 108 to 146. The note goes on to say, "The elevation of temperature occurred without any disturbance of the digestive organs or pains; in point of fact, the cause could not be recognized." In this case a distinct blowing murmur was present before the pyrexial attacks, and these did not seem to lead to any change in its character after they passed away.

In the case of a girl in my ward in the Western Infirmary, last February, affected with ordinary chorea, without any rheumatic history, the temperature ran up for three days to the height of 103° F. at nights. In view of the endocardial theory



here advanced, a very critical watch was kept on the symptoms and signs. The child did not seem ill, although a little quieter in her manner from the feverish state she was in. No explanation could be found, after careful watching and examination, further than a "cantering" action of the heart, which was only detected once or twice. In her case no murmur was

heard on admission, and none became developed during her residence. She was kept strictly in bed while feverish and for a few days after the subsidence of the pyrexia.

From the practical point of view, the importance of this subject turns on the treatment by rest when such pyrexial attacks are recognized in the course of chorea. The child should be kept completely in bed during the febricula; this is often so slightly marked and so completely dissociated from disagreeable symptoms that it is sometimes difficult to persuade the patient to keep at rest. But even after the pyrexia subsides the child should still be kept at rest for a few days. In this way we may at least hope, by lessening the strain, to minimize the results of the injury done to the valves of the endocardium, and serious damage may be thus avoided, or at least lessened.

## CIRRHOSIS OF THE LIVER IN CHILDHOOD.\*

BY WILLIAM A. EDWARDS, M.D.,

San Diego, California,

Fellow of the College of Physicians of Philadelphia, American Pediatric and Pathological Societies, formerly Instructor in Clinical Medicine in the University of Pennsylvania, Physician to St. Joseph's Hospital and to the Department for Diseases of Children, and Associate Pathologist to the Philadelphia Hospital, etc.

HEPATIC cirrhosis, arising before the growth of the individual is attained, is a rare malady, consequently its study is surrounded by much obscurity, and its pathological factors but little understood; Gerhardt remarks that the malady is so rare that if we exclude the syphilitic cases but few examples of the disease are met with at all to prove its existence.

Rilliet, Barthez, Barrier, and recently Despine, Picot, and Deseroizilles, all consider it among the rarer diseases of childhood; Laure and Honorat, during three years service in a ward of thirty beds, observed but five cases; nor does the

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\* Read at the semi-annual meeting of the Southern California Medical Society, December 4 and 5, 1880.

disease appear to be more frequent under different climatic conditions in different countries; for example, Neureuter, in Vienna hospital wards, has found its relative percentage of frequency to be about one-tenth of one per cent.; Steiner makes a similar statement; West, in England, finds but four cases in seventy thousand diseased children; but in opposition to this statement we must remember that Eustace Smith states that cirrhosis of the liver, although not one of the more common diseases in the child, cannot be said to be very rare; it is indeed difficult to reconcile these two diametrically opposed statements of such careful observers.

Thierfelder, Birch-Hirschfeld, and Henoch give testimony to its rarity, the latter never having seen fully-developed hepatic cirrhosis in a child.

In Canada, Howard\* has recorded two cases; Germany presents eighteen; England, forty-four; France, fifteen; the United States, eight; Ireland, four; and India, one. This recapitulation will serve to show how very rare is the disease that we are considering; Flint, in a personal communication to Howard, remarks upon its exceeding rarity in the United States.

*Pathology.*—When considering the pathology of cirrhosis, we must remember that etiological studies in hepatic cirrhosis, even in the young, must always be pursued with regard to the action of alcohol upon the tissues. The literature, however, presents but few cases in which alcohol has been used at all in the young, and very rarely is it mentioned that it has been used in excess; many writers agree in relegating to alcohol a

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\* The cases are credited to the nationality of the observer who reports them. England presents forty-four cases in the literature; five cases were reported to me in a personal communication from J. F. Goodhart, London, England. Hatfield, in his recent article in Keating's "Cyclopædia" (advance sheets), states that he can add ninety-three cases to those of Howard, sixty-three of which have been reported during the last fifty years, making a total of one hundred and fifty-six cases; but to obtain this list he seems to have included all forms of "contractions of the liver,"—cirrhosis, which is malarial and syphilitic, and examples of acute yellow atrophy; but even accepting this as the total result of all cases reported in fifty years, it still does not make the disease a frequent one, Eustace Smith's statements notwithstanding.



minor position as a causative agent, though, as Gerhardt remarks, the presence of alcoholism in childhood is a very difficult matter to prove, Goodhart stating that while we have definite proof that some of the cases have been due to alcoholism, in others there has been no sufficient disproof of the possibility of such an exciting cause, as reference to the appended table will show that many writers have neglected to state whether the child used alcohol or not. Frerichs reports, in thirty-six cases of cirrhosis in children, twelve, or one-third, were brandy-drinkers. Hatfield reports that out of Bamberger's thirty-four cases, ten were brandy-drinkers. Laure and Honorat state that the alcoholic origin of cirrhosis is particularly shown in England, where the children of the poorer classes are given alcohol at a very young age; the authors consider that in one of their cases, at all events, they have definitely proven this relation. Within the last few years we have not attached the same importance to alcohol as a causative agent in the production of cirrhosis as did pathologists and clinicians of ten years ago; for example, Alison,\* after an exhaustive consideration of the effects of alcohol on the economy and its special action on the liver, considers that the business of the individual, outside of the causes commonly attributed to cirrhosis, plays an important rôle in its development. Field-laborers are rarely attacked by it, and it is more rare in persons given to manual labor than in those who lead sedentary lives.

The slight effect that alcohol has in these cases is further illustrated by the fact that its habitual use is mentioned so rarely in the appended table, in all only eleven times, its absence being noted in fifty cases, and no mention being made of it at all in thirty-three instances. In six times it is recorded as probable.

The infectious fevers, however, seem to play a more important rôle in the etiology of the disease; indeed, the hepatic derangement of these fevers may and often does persist after they have subsided, and thus is said, in a very insidious manner, absolutely independent of syphilitic contamination or al-

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\* *Arch. Gén. de Méd.*, September, 1888.

coholic abuse, to produce chronic interstitial hepatitis. Laure and Honorat state that they have found in a certain number of cases a direct relation between the infectious fevers and interstitial hepatitis, the former always preceding the latter; in support of this statement Freiderich, Bierner, Wagner, Weigert, and Klein have all demonstrated the presence of lesions in the liver during the infectious fevers. The French observers above quoted have more particularly studied the liver changes in scarlatina, variola, diphtheria, typhus fever, and especially in morbilli. From a large number of autopsies they were able to study all stages, from simple lymphatic infiltration to confirmed cirrhosis, and they have observed the same conditions following measles in the adult as in the child. The general appearance of the liver is slightly enlarged, with a variable color showing grayish on section, often irregular in outline, sometimes nutmeg, and not infrequently presenting a marked fatty change; indeed, the liver-cells are infiltrated with fat, which may be uniform throughout or limited to the periphery. The intralobular capillaries are usually dilated, the connective tissue much more abundant than normal, the portal veins dilated, and their connective tissue proliferated. The tunics of the arteries and veins are much thickened; the biliary canals are also dilated, and are more apparent than is normal, the newly-formed connective tissue seems to form pseudo-canals; the connective-tissue formation on the periphery grows centripetally, and meets a little islet of embryonic connective tissue in the centre of the lobule, and, uniting around the canals, constitute a veritable example of interstitial hepatitis, these lesions often disappear and the organ returns to the normal; but, on the other hand, they may persist, just as interstitial nephritis follows scarlatina. Hebrard has recorded one case of interstitial hepatitis following measles, with microscopic studies presenting infiltration by newly-formed connective tissue, distention of veins and arteries, and much fatty degeneration, and Klein has examined eight examples of acute interstitial hepatitis present in scarlatinous cases.\* Siredey,

\* From advance sheets of the Transactions of the American Pediatric Society, 1889, kindly furnished me by Dr. William P. Watson, *Arch. of Ped.*

a short time after the publication of Laure and Honorat, published a paper with much the same conclusions, except that he failed to find as a constant anatomical lesion in the infectious fevers a proliferation of the connective tissue of the biliary canals. All these observers agree that there is never any modification in the endothelium of the blood capillaries of the liver.

Siredey's case had had scarlatina, and enormous liver, ascites, albuminuria, and succeeded a renal lesion, which was in excess of the hepatic cirrhosis; but the latter was well marked and easily demonstrable at the autopsy.\* The case reported in the present communication would seem to be an example of cirrhosis following the infectious fevers, as the child is not syphilitic and is a non-alcoholic, and has suffered most severely from both measles and scarlatina.

Hatfield has recently reported two fatal cases of biliary cirrhosis, which he describes as illustrations of the *cirrhose hypertrophie avec ictère* of the French; but a careful consideration of the microscopic examination seems to me to more properly class the case among those rare illustrations in childhood of a tendency to a general fibrosis, and to be of further interest in the fact that the connective-tissue thickening, surrounding the arteries, would give weight to the consideration of an arterio-capillary fibrosis as an etiological factor in the hepatic cirrhosis of childhood. Howard, in his series, has collated six cases in which the cirrhosis seemed to be part of a general fibroid change, and one case in which Gull and Sutton's oft-described arterio-capillary change could be considered as a causative agent.

A tuberculosis may cause an hepatic cirrhosis; indeed, the influence of tuberculosis upon the production of cirrhosis seems to be well established. Sabourin (*Arch. Phys.*, 1883-84) and Bellangé (*Thèse de Paris*, 1884) have endeavored to show that it is a true tubercular cirrhosis accompanied by granulations. Among the fifty-one cases contained in the monograph of Laure and Honorat, the association of tuberculous disease

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\* We must, however, on the whole, conclude that Botkin's statement that the infectious fevers often originate connective-tissue changes is not as yet beyond argument.



and hepatic cirrhosis has been observed in seven instances. In cases of cirrhosis accompanying phthisis, a fibroid change takes place in the liver without the deposition of tubercles, in this way being akin to the cirrhosis accompanying the eruptive fevers. In some cases the pathological change seems to be set on foot by a faulty digestion, possibly developing a poisonous alkaloid through abnormal chylopoietic metabolism. Of late years this subject of faulty digestion and the alkaloidal products of albuminous decomposition—the ptomaines—have been regarded as a possible cause of interstitial hepatitis, although the subject is as yet *sub judice*. It is but necessary to mention the influence of syphilis in producing cirrhosis; this influence has been present in twelve per cent. of the recorded cases, most usually hereditary. Hatfield's two cases of congenital pernicious icterus, already referred to, are somewhat unique, being illustrations of congenital cirrhosis with general fibrosis. Grisey states that we must consider inflammation of the duodenum, burns of the abdomen, the influence of cold and of traumatism in producing the disease under consideration; it is also worthy of note, in passing, that until this observer wrote his paper, in 1884, most cases of infantile cirrhosis were apt to be considered syphilitic.

Regarding the form of disease as it occurs in childhood, it may be either the atrophic or the hypertrophic varieties, not unusually the so-called mixed cirrhosis is met with; some observers regard the latter as rather the usual form in childhood.

It may perhaps be well to state that by cirrhosis of the liver we understand, in this paper, a diffuse development of the connective tissue of the organ, and we may adopt the classification of George Munroe Smith,\* in combination with the statements of Howard, whose paper antedated the former by about a year:

1. Obstructive cirrhosis (*a*) due to the impediment of the flow of bile, the so-called biliary cirrhosis which may be caused by obstruction of the bile-ducts, either from congenital defects or post-natal disorders; (*b*) to the flow of blood to or from the

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\* *Brit. Med. Jour.*, June 30, 1888.

liver,—chronic congestion of the hepatic vein, as seen in either pulmonary or valvular disease, and rarely, as Howard says, from obstruction or obliteration of the hepatic veins, or of the inferior vena cava above the entrance of the hepatic vein; (c) cyanotic cirrhosis.

2. Irritative cirrhosis due to irritative or toxic substances in the blood,—(a) alcohol, (b) syphilis,\* (c) malaria, (d) lithic acid, as in the lithic acid or gouty dyscrasia,† (e) blood pigment in diabetes.‡

Cirrhosis may also be caused by continuity and contiguity of tissue, as extensive inflammation in chronic peritonitis or perihepatitis, and by obstruction of the bile-ducts either congenitally or by post-congenital neoplasms or gall-stones, and, lastly, in association with a general fibroid change, the fibroid diathesis.

The case that forms the basis of this paper occurred in my private practice in Philadelphia, where it was under observation for about a year; the lad has been sent to me here in California, and has been under my direct personal supervision in my private hospital in San Diego since last July, 1889.

G. L., aged ten. (Notes taken June, 1888.)

*Family History.*—Mother alive and healthy; age thirty-one at the birth of this child; mother's age was twenty-one, and father fifty-two; the latter died three years afterwards of cerebral apoplexy; sugar was detected in his urine three weeks before death. Paternal father died of cerebral apoplexy at an advanced age; paternal mother died in child-birth; maternal mother died young,—child-birth; maternal father still living, and apparently strong and well, although, at times, there is sugar detected in his urine.

Father has four sisters living and one brother, another brother having died of apoplexy about two years ago; sisters are all of advanced age,—three unmarried and one married;

\* Howard reports three cases of adhesive inflammation of the portal vein (pyelephlebitis), due to syphilis.

† Howard remarks that Thierfelder doubts this; but Murchison maintains it from his own observation: "Diseases of the Liver," 3. ed. p. 636, 1885.

‡ Hanot, *Arch. de Phys. Normal et Path.*, Paris, 3. s., vii. 50-87, and Latulle, No. 20. *Bull. et Mém. de la Soc. Méd. des Hôpitaux* (Howard).

the latter has suffered for several years from uric acid diathesis; mother's sisters all healthy. Child has one brother, aged thirteen, who is strong and healthy; a sister, aged seven, who is delicate; a baby brother died from acute capillary bronchitis.

*Personal History.*—Born in England May 10, 1878; weight between eight and nine pounds; nursed by his mother for a little over eleven months, during which time perfectly well and healthy, increasing in weight. Within a month after weaning began to get thin and puny; first tooth cut at fifteen months, at which age he had measles, followed in a few days by inflammation of the lungs (August, 1879); from that illness he scarcely rallied before he was attacked with congestion of the lungs (end of October, 1879), when he lay unconscious for about three days, with eyes partially closed, food having to be dropped into his mouth with difficulty because he was hard to arouse; this was followed by another attack of the same character in December, 1879; he continued delicate until June, 1880, when he was isolated for scarlet fever, but did not appear to be sick; kept up and around the room; from that date he had a chronic nettle-rash and sudden swellings would come on the forehead, almost the size of an egg, quite deforming his appearance. (It is always doubtful if this above attack was scarlet fever.) The following March, 1881, he had a veritable attack of scarlet fever, diphtheritic sore throat, tongue thick and swollen, covered with ulcers and too large to remain in the mouth; the rash did not appear after the first day, and then only to a slight degree. He began to stand alone at the age of two years and five months, but the illness just referred to put him back, and he did not again walk until the fall of 1881; these sudden swellings, confined to the head, still continued, as did also the nettle-rash. This rash was all over the body; one day it would come in the back, next in the arms, etc., but the toes and fingers suffered much; the irritation was so great, the rash on the toes and fingers looked more like small, hard water-blisters. He would scratch them until broken, and then they would be sore. When in bed, they would irritate most. This continued more or less until two years ago, although even now, in the summer, he has a return of the rash to a slight degree; ever since



he had scarlet fever he has passed his urine in bed. In the summer of 1882 he had whooping-cough very badly; he was then four years of age. He was very slow in cutting his teeth, and almost as soon as they came they decayed; even his second teeth are in a very bad condition. Every winter he has a bad cough (bronchitis). He has always appeared swollen from the ensiform cartilage to the umbilicus; but it seems to have increased lately.\* The child, when first brought to me, was suffering from subacute bronchitis; was slightly jaundiced, two weeks before his first visit; epistaxis arose, and occurred several times a week for the next three months; the slightest exertion will produce nose-bleed. Alternating attacks of diarrhoea and constipation arose.

Urine normal in every respect; nocturnal incontinence, however, has been a troublesome and persistent symptom for years. Heart is irregular but without a murmur. The liver is greatly enlarged; extends nine metres below the costal arch in the nipple line; its left lobe encroaches beneath the left costo-xiphoid angle; it is smooth and firm on palpation, slightly tender over the right lobe, and during the last year has increased slowly but markedly in size. The spleen throughout this period has been slightly enlarged.

An examination of the blood, made by Dr. William Osler (October 25, 1888), now Professor of Medicine in Johns Hopkins University, Baltimore, demonstrated the fact that there was nothing special to note about the corpuscles; the red were healthy, natural, and of uniform size; no distortion nor nucleated red corpuscles were observed; many hæmatoblasts, however, were recorded. The white corpuscles were of natural appearance, and but little if any variation in size was observed.

No malarial organisms† have at any time been observed.

Several blood counts, made since the above was recorded, have shown an almost normal proportion of red and white cells, with the total number of the former at about the natural standard.

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\* These notes were taken by the child's mother, and are given mainly in her language.

† Lavarán's germs; hæmatozoa of malaria.

The temperature has always been most irregular, and has been taken off and on for the last year; it fluctuates between  $100^{\circ}$  and  $97\frac{1}{2}^{\circ}$  F.; it is quite as often below the normal as it is above that standard.

There are no evidences of syphilis, and the child has never used alcohol.

The peculiar transitory egg-shaped swellings which from time to time have appeared upon the forehead, as already mentioned, are illustrations of the condition known by the terms acute local, acute circumscribed, or angio-neurotic œdema, and has been described by Dinkelaker,\* Jamieson,† Graham,‡ Riehl,§ Falcone,|| Strübing,¶ Matas,\*\* Quinke,†† and Osler,‡‡ in some instances (three) presenting a distinct hereditary aspect, although this latter factor is lacking in our case; but the association of angio-neurotic œdema and urticaria was here well marked, adding another link to the chain of argument that supports the statement that the œdema is a vasomotor neurosis; indeed, the œdema in some instances resembles urticaria tuberosa, and the last-quoted observer tells us that Juler has described a case of urticaria porcellana, which belongs to the same class of cases, all of which serve to illustrate the nervous origin of the œdema.

*Etiology.*—In the present communication we have excluded all cases over eighteen years of age, as the diet, habits, and the condition of living generally at this age so nearly approaches the adult that the use or abuse of alcohol would then merit more particular consideration as an etiological factor. The various ages, then, at which cirrhosis of the liver has been observed are, together with the sex, as follows:

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\* "Ueber Acutes Œdem," Inaug. Dissertation, Kiel, 1882.

† *Edinburgh Medical Journal*, June, 1833.

‡ *Canadian Practitioner*, 1885.

§ *Abstract London Medical Record*, December, 1887.

|| *Gazette Degli Ospitali*, February 24, 1886.

¶ Quoted by Matas.

\*\* *New Orleans Medical Journal*, October, 1887.

†† *Monatshefte für Pratische Dermatologie*, 1882.

‡‡ *American Journal of the Medical Sciences*, April, 1889, to whom I am indebted for these references.

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Age.		Male.	Female.	Not stated.
At birth.....	4	1	2	1
9 days.....	3	1	1	1
18 ".....	1	...	...	1
1 month.....	1	...	...	1
3 months.....	2	...	2	...
6 ".....	1	...	...	1
11 ".....	2	...	...	2
17 ".....	2	2	...	...
20 ".....	1	1	...	...
2 years.....	2	2	...	...
32 months.....	1	1	...	...
34 ".....	2	...	2	...
3 years.....	2	1	...	1
3½ ".....	2	1	...	1
4 ".....	1	...	...	1
4½ ".....	1	...	1	...
5 ".....	6	3	3	...
5½ ".....	1	1	...	...
6 ".....	4	2	1	1
6½ ".....	1	1	...	...
7 ".....	6	3	3	...
7½ ".....	2	...	2	...
8 ".....	4	2	2	...
8½ ".....	1	1	...	...
9 ".....	7	2	3	2
9½ ".....	1	1	...	...
10 ".....	8	5	3	...
11 ".....	7	6	1	...
12 ".....	9	7	2	...
13 ".....	6	1	4	1
14 ".....	3	3	...	...
15 ".....	4	4	...	...
15½ ".....	1	...	1	...
16 ".....	1	1	...	...
	—	—	—	—
	100	53	33	14

In two instances the age and sex was not stated. The age of greatest frequency is, according to this table, from nine to twelve years; and males are more often affected than females, in the proportion of almost two to one.

The atrophic is the most unusual form mentioned by the observers, although a more careful analysis would lead one to conclude that many of the cases were illustrations of fatty cirrhosis.

*Symptomatology* differs but little from the adult. The



symptoms at first are apt to be confounded with simple congestion. Digestive troubles exist,—abdominal pain, slightly augmented by pressure, alternating diarrhœa and constipation, increase in the size of the liver, slight ascites, dilatation of the subcutaneous abdominal veins, and slight jaundice or a subicteroid tint of the face.

In Howard's two cases, stigmata composed of collections of dilated minute venules, were observed on the face, to which he attaches great importance, and states that their presence should suggest an examination of the liver, with special reference to the probable existence of cirrhosis. In some cases the jaundice is not well marked; in others, it is most pronounced and accompanied by purpura, epistaxis, and other hemorrhages, all of which, as we so well know, are apt to be the attendants of grave jaundice. The icterus is apt to be transient, and generally disappears as the disease progresses. Emaciation becomes pronounced as the case advances. The liver recedes and is not discernible by percussion. Ascites increases, and later general œdema arises. Dyspnœa, diarrhœa, or, in a word, the signs of confirmed cachexia, to which the child succumbs, either by a pronounced toxæmia, peritonitis, asthenia, or disorders of the nervous system. Other modes of death have been recorded, but space forbids a complete record of them here.\*

A large proportion of the cases of infantile cirrhosis present irregularities in the temperature curves. In Howard's series, nineteen and two-tenths per cent. of the cases which were uncomplicated by other affections that might produce pyrexia, presented a temperature above the normal. Our own case presents a temperature which, within a month, fluctuates between 100° and 97 $\frac{3}{5}$ ° F. It was quite as apt to be subnormal as abnormal.

The prognosis and treatment are about as in the adult, and space forbids a recapitulation here. Suffice it to say, however, that within the last eighteen months cases have been reported that appear to show that the prognosis is not as hopelessly fatal as we have formerly considered it.

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\* Among these causes are pleurisy, pulmonary congestion, pneumonia, diarrhœa, ulceration of the entire colon, tubercular meningitis, and hemorrhages from the various mucous membranes and the kidneys.

No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
1	F.	Premature birth.	.....	Con- genital.	Slight.	Yes.	One-third larger than normal; soft; hard nodules, which were large branches of diseased portal vein, which, as it entered liver, was a cord one centimetre thick, a diffuse syphilitomatous infiltration of liver substance.	Twice normal size.	.....	Increase of connective tissue was general.	.....	Schuppel, "Peri- syphilitica in the New-born," Arch. d. Heilkunde, 1870, xl. 74.
2	M.	Died at birth.	.....	Not stated.	Yes.	Not stated.	Small, surface granular, dark brown-green, firm, somewhat fatty.	Small and dense.	Granular.	Heart murmurs, anomalies both of position and structure.	Died at birth.	Virchow, Arch., 1861, Bd. xxvi. 426.
3	Not stated.	At birth.	No.	Not stated.	Not stated.	Yes.	Small, green-yellow, granular; much connective tissue.	Normal.	Not stated.	Mucous membrane of stomach pale; colon injected.	Congenital; a still-born twin.	Weber, Beiträge zur Path. Anat. der Nageborenen, 1894, III. 47.
4	Not stated.	8 hours.	.....	Con- genital.	Yes.	.....	Enormously enlarged, firm, brown-green, anæmic. Large branch of portal vein going to left lobe was a firm, fibrous cord; lumen greatly narrowed. The disease was limited to large branches of the left portal vein. The whole liver was infiltrated with lymphoid cells.	24 grammes, firm, hy- peræmic.	.....	Syphilis, congenital.	.....	Schuppel, "Peri- syphilitica in the New-born," Arch. d. Heilkunde, 1870, xl. 74.
5	F.	8½ days.	.....	Not stated.	Edema.	Yes.	Enlarged, soft, firm nodules, which are hardened branches of the portal vein. Portal vein and hepatic artery are a firm, fibrous cord.	Three times normal size; stiff and friable.	.....	.....	Collapse.	Ibid.

3	M.	9 days.	No.	No.	Yes.	<p>There is a large number of circumscribed, circular, and ovoid, occasionally branching, islands of connective tissue, which surround the gall-ducts. An occasional aggregation of leucocytes lie in the periphery of the lobules, but in no case surround them. The capillaries are apparently thicker than normal, and in large areas of the tissue are irregular in size, contour, and distribution; they contain a few leucocytes. In many places the amount of connective tissue, which represents the reflections of the capsule of Glisson, is largely in excess of normal. Scattered over the sections, in much the same general manner as the islands of leucocytes and distributed in chronic syphilitic hepatitis, there are clumps of small, round, solid nuclei, whose arrangement is that of those surrounding a gall-duct in some cases, and, in others, so strongly suggests the same arrangement that there can be little doubt that they are such. The capsule is moderately thickened.</p>	<p>Much enlarged.</p>	<p>Not stated.</p>	<p>The lung lesions are analogous to those found in the liver.</p>	<p>Death painless, at ninth day.</p>	<p>Hatfield, Trans. Am. Ped. Soc., 1889.</p>
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No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
7	.....	9 days.	No.	No.	.....	.....	Typical cirrhosis.	.....	.....	.....	Died.	Steele, Jahrb. f. Kinderkrank., vol. xvi, p. 236. Hatfield, Trans. Am. Ped. Soc., 1889.
8	.....	13 days.	.....	No.	No.	Yes.	No post-mortem.	Enlarged.	.....	.....	.....	.....
9	.....	1 mo.	No.	Not stated.	Not stated.	Not stated.	Hypertrophied, globular, hard, and smooth; buff or pale yellow color. Microscope showed whole substance infiltrated with new connective tissue, but not to its destruction. Weight, 1½ pounds. Reached 1½ inches below right costal border.	Not stated.	Not stated.	Liver felt enlarged during life.	Not stated.	Wilks, Lond. Path. Soc. Trans., xvii, p. 167, 1866.
10	F.	3 mos.	.....	Con- genital.	.....	.....	.....	.....	.....	.....	Recovered in one month, under mercury.	Henoch, Beiträge z. Kinderheilk., 1868, 340, v. 419.
11	F.	3 mos.	No.	No.	Slight.	.....	15½ ounces; occupied one-third of abdomen; pale; lobules at places separated by strands of coarse fibrous material.	Enlarged and firm.	.....	Walls of various vessels seemed thickened; mesenteric glands all enlarged; frequent epistaxis.	Died in convulsions.	Oliver, Brit. Med. Journ., 1885, i, p. 846.
12	.....	6 mos.	.....	.....	No.	No.	Hypertrophic cirrhosis.	.....	.....	Congenital obstruction of ductus communis chole- dochus.	Died.	Trans. Lond. Path. Soc., vol. xxxiv, 1882, p. 129.
13	.....	11 mos.	.....	.....	.....	.....	Atrophic cirrhosis.	Greatly enlarged.	.....	.....	Died.	Gibbons, Indian Med. Gaz., Feb., 1888.

14	.....	11 mos.	No.	No.	No.	Yes.	Yes.	Enlarged and extremely hard.	Not stated.	Not stated.	Not stated.	Fever, nausea, and constipation.	Exhaustion.	Gilbons, Indian Med. Gaz., Feb., 1888.
								weighed 10 ounces; firm and resistant; bile stained and anemic. Microscope showed thickening of the capsule, with bands of fibrous tissue surmounting each of the lobules; greater number of the lobules were small, some consisting of only a few hepatic cells massed together. Hepatic cells nowhere arranged in regular radiating rows, as in normal liver. In parts, fibres were seen passing from the encircling bands in between the hepatocells towards the centre of the lobule.	Greatly enlarged, soft, and pulpy. Weight, 8 ounces.	Not stated.				
15	M.	17 mos.	No.	No.	No.	No.	No.	Natural size, smooth, pale yellow. Microscope showed bands of fibrous tissue and lymphatic corpuscles.	Normal.	.....	.....	Tubercular meningitis.	Died.	Legg, St. Barth. Hosp. Rep., 1887, xiii. p. 155.
16	M.	17 mos.	No.	Not stated.	Yes.	No.	No.	16½ ounces; small, tough, nodular.	Natural size: tough.	Normal.	.....	.....	Died.	Gee, Ibid., vii. p. 144.
17	M.	20 mos.	No.	Not stated.	Not stated.	Not stated.	Not stated.	Typical cirrhosis.	.....	.....	.....	.....	Died.	West, Diseases of Infancy and Childhood.
18	M.	2 yrs.	No.	No.	No.	Yes.	Yes.	Small, flabby, hyperæmic; considered a hypertrophic cirrhosis.	Normal.	.....	.....	Pyrexia. It is interesting to note that this child received a severe scald four months before admission.	Convulsions.	West, St. Barth. Hosp. Rep., 1887, vol. xiii. p. 221.
19	M.	2 yrs.	No.	Yes.	Yes.	Yes.	Yes.	Enlarged and extremely hard.	Not stated.	Not stated.	.....	.....	Died from exhaustion.	Marsh, N.Y. Med. Rec., Dec. 19, 1885.

No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
20	M.	2 years 8 mos.	No.	Not stated.	Yes.	Yes.	Enlarged and hard; no post-mortem.	Not stated.	Not stated.	Not stated; elevated temperature; father died of cirrhosis.	Died.	Marsh, N.Y. Med. Rec., Dec. 19, 1885.
21	M.	3 yrs.	Yes.	Not stated.	Yes.	Yes.	Dulness $2\frac{1}{2}$ inches below margin of ribs; edges of liver hard.	Normal.	.....	Hæmatemesis; veins distended in upper abdomen; fever.	Improved.	Reynolds, Med. Times and Gaz., 1886, vol. i. p. 35.
22	Not stated.	3 yrs.	No.	Not stated.	.....	.....	Enlarged, tough, and dense.	.....	.....	Tubercular mon- ingitis; caseous nodules in lungs; tubercular ulcers in intestine.	Died.	Smith, Med. Times, 1885, vol. ii. p. 872.
23	.....	$3\frac{1}{2}$ yrs.	Not stated.	Not stated.	Yes.	Yes.	"Simple cirrhosis."	.....	Bright's disease.	.....	Died.	Becquerel, Arch. Gén. de Méd., 3d Ser., 1840, iii. p. 58.
24	M.	$3\frac{1}{2}$ yrs.	No.	No.	Yes.	Yes.	Typical hobnailed.	Enlarged.	Not stated; no albuminuria.	General tuberculosis; chronic and recent peritonitis; tapped twice.	Died; peritonitis.	Hutton, Brit. Med. Journ., vol. i., 1883.
25	.....	4 yrs.	No.	No.	No.	.....	Hypertrophic cirrhosis.	.....	.....	No malaria.	.....	Wettergreen, Hygiea, 1880, Lond. Med. Rec., March 16, 1881.
26	F.	$4\frac{1}{2}$ yrs.	No.	No.	No.	Yes.	Enlarged, nodular, and tough. Microscope showed enormous development of new connective tissue, both between and penetrating the lobules.	Twice normal size.	Not stated.	Icterus neonatorum at birth; some symptoms of rickets at end of first year; two attacks of bronchitis and jaundice, the second fatal;	Coma.	Fred. J. Smith,* Lond. Path. Soc., Nov. 6, 1884; Lancet, Nov. 9, 1889, p. 955.



27	M.	5 yrs.	Probable.	No.	.....	Yes.	Typical hobnailed; contracted; 25 ounces; granular atrophic cirrhosis.	Much enlarged; 23 oz.	No albumen.	together with a profuse diarrhoea.	Taylor, Trans. Path. Soc., xxxi. p. 119.
28	F.	5 years when first observed, now 10.	No.	No.	No.	Yes.	Enormously enlarged.	Much enlarged.	No albumen.	Not dead when reported.	M. P. Jacob, Arch. Pediatrics, May, 1889, p. 273.
29	M.	5 yrs.	Not stated.	Not stated.	Yes; marked.	.....	7.2 inches long; left lobe 4.4 inches long; red, dense, flat knobs, varying in size from a pea to a hazel-nut.	Enlarged.	No albumen.	Died.	Unterbucher, Jahrbuch Kinderheilkunde, Bd. ix. 390, 1876; Lond. Med. Rec., 1875, p. 258.
30	M.	5 yrs.	No.	No.	Yes.	Slight.	Enlarged; 7.2 x 4.4 inches; knobby and firm.	Three times normal size.	.....	Died.	Wettergreen, Nord. Arch., Bd. xii. 4; Lond. Med. Rec., 1881, p. 118.
31	F.	5 yrs.	No.	Not stated.	Not stated.	No.	Cirrhosed; covered with nodules; dense, firm.	Greatly enlarged; congested.	Not stated.	Died from hemorrhage.	Murray, Lancet, 1863, vol. ii. p. 221.

\* In the discussion of this paper, West referred to a similar case in a child aged four (sex not stated), who was suffering from an acute illness. No jaundice, no history of poisoning. Child died in seven or eight days. Microscope showed each lobule penetrated by small-celled connective-tissue growth. Liver was very small.

No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
32	F.	5 yrs.	Not stated.	Not stated.	Not stated.	Yes.	Cirrhotic; lobulated.	Not stated.	Not stated.	Tuberculosis of lung.	Died.	Mauthner, Journ. f. Kinderk., vol. xxvi, p. 433.
33	M.	5½ yrs.	No.	Not stated.	Yes.	Yes.	34 ounces; left lobe contracted and tougher than right, and its glandular structures much atrophied and replaced by net-work of blood-vessels enclosed in sheaves of connective stroma.	2½ ounces; much firmer than natural.	Not stated.	Paternal grandfather and uncle died of phthisis; firm adhesions between right lobe of liver and diaphragm; old pericardial and pleural adhesions, and some recent pleurisy; tubercles in the pleura, and cretified tubercle in the bronchial gland; superficial veins injected.	Died.	Hillier, Trans. Clin. Soc. Lond., vol. i, p. 107.
34	.....	6 yrs.	Not stated.	Not stated.	Yes.	No.	Atrophic cirrhosis.	Not stated.	Not stated.	.....	Died.	Potel, Bull. de la Soc. Anat., 1879, p. 390.
35	F.	6 yrs.	No.	No.	Yes.	Yes.	Typical cirrhosis.	Not stated.	Not stated.	Malaria, epistaxis, and hematemesis; walls of blood-vessels in all organs thicker than normal.	Died; convulsions.	Cayley, Brit. Med. Journ., vol. ii, p. 113, 1876; Trans. Lond. Path. Soc., xxvii, 196.
36	M.	6 yrs.	No.	No.	Yes.	Yes.	Small, shrivelled, and stained; lobulated; weight, 1 pound; some fatty degeneration.	Not stated.	Not stated.	No tubercles anywhere; colon presents lesions of dysentery; had had measles.	Died.	Laure and Honorat, Rev. Med. des Mal. de l'Enf., April, 1887, p. 159.

37	M.	6 yrs.	No.	No.	Yes.	No.	20½ ounces; granular.	Hypertrophied; 4.2 ounces.	Normal.	Had measles; during cirrhosis highest temperature was 100.4°; tapped three times.	Died.	Grisey, Thèse, Paris, 1878.
38	M.	6½ yrs.	No.	No.	Yes.	No.	Small and shrivelled; numerous bands of fibrous tissue; an interlobular hyperplasia of connective tissue; lobules and cells distorted and pressed upon; the cirrhosis was most marked in the portal spaces, but bands of connective tissue penetrated to centre of lobule; the cells were better preserved in periphery than in lobule.	Not stated.	Cirrhosis.	Always sick from 18 months of age, and always had an enormous and tender stomach; cutaneous veins dilated.	Died.	Morel-Lavallée, Rev. Men. des Mal. de l'Enf. t. iii. p. 166, 1885; Oswald.
39	M.	7 yrs.	No.	Not stated.	No.	No.	Adherent to diaphragm; caseous nodules on its under surface; substance of liver looked fairly normal, but was so dense that it could not be broken down; microscope showed increase of fibro-nucleated tissue limited to portal canals.	Not stated.	Not stated.	Mother died of phthisis; had had measles, scarlatina, and pertussis; diarrhoea; enlarged abdominal glands; both lungs tuberculous.	Died.	Donkin, Med. Times, Lond., 1885, vol. ii. p. 872.
40	M.	7 yrs.	Probably.	No.	Yes.	Not stated.	35¼ ounces; firm, granular, dull orange; ligaments vascular; numerous adhesions.	3 ounces.	Each 2½ ounces.	Belly and chest covered with blue veins on right side.	Died semi-comatose.	Foot, Dublin Quar. Journ. Med. Sci., vol. lvi. p. 337.
41	F.	7 yrs.	No.	No.	Yes.	No.	Contracted and granular; typical cirrhosis.	Much enlarged.	Not stated; slight albuminuria.	Hydrothorax, pulmonary oedema; no malaria; no cardiac disease.	Died.	Cazilia, Progr. Méd., No. 12, 1875; Lancet, vol. i. p. 698, 1875.



No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
42	M.	7 yrs.	Not stated.	Not stated.	Yes.	No.	Increased.	Not stated.	Not stated; no albumen, no sugar.	Was vaccinated; had pertussis, measles, typhoid fever, and variola; tapped twice, 2 and 6 litres removed.	Died (?).	Laure and Honorat, Rev. Men. de l'Enf., April, 1887, p. 159.
43	F.	8 yrs.	Yes.	Not stated.	Not stated.	Not stated.	Small and hobnailed.	Not stated.	Not stated.	Not stated.	Died.	Wilkes, Guy's Hosp. Rep., 3d Ser., vol. xx. p. 192.
44	M.	8 yrs.	No.	Not stated.	Not stated.	Not stated.	All the characteristics of the disease, as in adult.	Not stated.	Not stated.	Not stated.	Died.	West, Dis. of Inf. and Childhood.
45	M.	8 yrs.	Not stated.	Probable.	No.	Not stated.	Hobnailed, with atrophy.	Not stated.	Not stated.	All the typical symptoms of cirrhosis.	Died; cholangia.	Forchheimer, Discussion on Howard's paper before Am. Ass. Phys., Wash- ington, 1887.
46	F.	8 yrs.	No.	No.	Not stated.	Yes.	Typical hobnailed, of normal size; had been large, but the excessive amount of interstitial tissue had prevented its contraction to less than normal size.	Not stated.	Not stated.	Measles, with symptoms of hepatic disorder, followed by attacks of catarrhal jaundice.	Died; duration of case one year.	Pepper, Ibid.
47	M.	8½ yrs.	No.	Not stated.	Not stated.	Not stated.	All the characteristics of the disease, as in adult.	Not stated.	Not stated.	Not stated.	Died.	West, Dis. of Inf. and Childhood.
48	M.	9 yrs.	Yes.	Not stated.	Yes.	No.	21½ ounces; small, hobnailed, and hard.	10 ounces; large, firm.	No albuminuria.	Tapped twice, 15 pints.	Died in colic from peritonitis.	Murchison, Trans. Soc. Path. Lond., xxvii. p. 199.
49	M.	9 yrs.	No.	No.	Yes.	No.	20½ ounces; typical cirrhosis; nodular, capsule thickened.	Enlarged and firm.	Not stated.	Measles and pertussis; epistaxis and morning sickness for four years.	Died suddenly; delirium and dyspnoea.	Moore (Gee), Trans. Soc. Path. Lond., xxxii. p. 133.

50	F.	9 yrs.	No.	No.	Yes.	Yes.	Very small, granular, and tough; traversed throughout by interstitial fibro-nuclear growth.	Greatly enlarged; exceeding liver in size.	No albuminuria.	Measles; epistaxis frequent; febrile attack; no malaria, and no cardiac disease; tapped.	Died from peritonitis.	Cazalis, Med., No. xli., 1876; Lancet, vol. i., 1876.
51	F.	9 yrs.	No.	Not stated.	Not stated.	Not stated.	41 ounces; hypertrophic cirrhosis; firm, hobnailed, and tough; microscope: increase of interlobular fibrous tissue; many leucocytes. Hobnailed liver.	Not stated.	Not stated.	Lobar pneumonia.	Died from pneumonia.	White, Trans. Soc. Path., Lond., xxxvi. p. 234; Lancet, 1885, vol. i. p. 232.
52	.....	9 yrs.	No.	No.	Yes.	No.	Enlarged, granular, tough, ashen; dirty white in color.	Not stated.	Not stated.	Had measles and pertussis; much hypertrophy of connective tissue, which had compressed lobules.	Death in 21 months; sudden.	Osborn, Trans. Lond. Path. Soc., vol. xxxii., 1881.
53	F.	9 yrs.	No.	No.	Yes.	Yes.	Enlarged, granular, tough, ashen; dirty white in color.	Enlarged; three times normal size.	Large; congested; bladder normal.	Had measles, croup, pertussis, and vari-cella.	Died.	R. P. Howard, Trans. Ass. Am. Phys., Wash., 1887.
54	Not stated.	9 yrs.	Not stated.	Not stated.	Yes.	Not stated.	Hypertrophied liver.	Enlarged.	Not stated.	Tuberculosis.	Died.	Oswald, Trans. Obstet. Soc. Lond., t. xviii. 1876.
55	M.	9¼ yrs.	Not stated.	Not stated.	Yes.	Yes.	Atrophic cirrhosis.	Not stated.	Not stated.	Tubercular peritonitis.	Died.	Laure and Honorat, Rev. Mèd. des Mal. de l'Enf., April, 1887, p. 159.
56	F.	10 yrs.	No.	No.	Yes.	Yes.	15 ounces; irregularly lobulated and granular.	As large as liver; hard and tough.	Not stated.	Had scarlatina.	Died after second tapping.	T. H. Green, Trans. Path. Soc. Lond., xxvii. p. 126.
57	F.	10 yrs.	No.	Not stated.	Yes.	Yes.	Bough, nodular, dense, with great elastic bands of fibrous tissue in its substance; tuberculosis of peritoneum.	Not stated.	Not stated.	Not stated.	Died.	W. Moore, Trans. Path. Soc., vol. xxxii. p. 132.

No.	Sex.	Age.	Alcohol.	Syphilis.	Asites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
58	M.	10 yrs.	No.	Not stated.	No.	Yes.	Slightly reduced in size; smooth; bile stained; tougher than natural.	Not stated.	Not stated.	Not stated.	Died.	T. H. Green, Trans. Path. Soc., vol. xxiii, p. 133.
59	M.	10 yrs.	No.	No.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Died.	Frerichs, "Clin. Treatise on Disease of Liver," Syd. Soc. ed., li, p. 35.
60	M.	10 yrs.	No.	Not stated.	Not stated.	Not stated.	All the characteristics of the disease, as in adult.	Not stated.	Not stated.	Not stated.	Died.	West, Dis. of Inf. and Childhood.
61	M.	10 yrs.	No.	No.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Not stated.	Died.	Frerichs's Klinik. d. Leberkrankheit, li, 35.
62	M.	10 yrs.	No.	No.	Yes.	Yes; persistent.	2½ pounds; enlarged; hobnailed.	Three times normal size.	Not stated.	Had measles, pertussis, and scarlatina, herpes, dilated venules, fever, epistaxis, hematuria; peritoneum normal.	Died.	Howard, Ibid.
63	F.	10 yrs.	No.	No.	Yes.	Yes.	Atrophic cirrhosis.	Not stated.	Not stated.	All diseases of childhood; no tubercles.	Died.	Griffith, Trans. Lond. Path. Soc., Dec., 1873.
64	M.	11 yrs.	No.	No.	No.	Yes.	Typical cirrhosis; some fatty degeneration; rapid development.	Enlarged and soft.	Interstitial nephritis.	Scrophulous Measles and malaria.	Died.	Steffen, Jahrb. f. Heilkunde, 1869, Bd. li, p. 211.
65	M.	11 yrs.	No.	No.	Not stated.	Yes.	Not stated.	Enlarged and soft.	Interstitial nephritis.	No malaria; had typhoid fever two years before.	Apparently recovered.	Laure and Honorat, Ibid.
66	M.	11 yrs.	Possibly.	Not stated.	Not stated.	Yes.	Usual size; studded with nodules.	Enlarged and soft.	Interstitial nephritis.	Ill for two and a half years.	Died.	Wilks, Lond. Path. Soc., xiv, p. 176.



67	F.	11 yrs.	Some.	No.	Not stated.	Yes.	Cirrhosed, small, hobnailed; adherent to diaphragm.	Enlarged and firm.	Congested; no albumen.	No malaria; had measles, and made a slow convalescence; hæmatemesis.	Died unconscious after severe hæmatemesis.	Oliver, Brit. Med. Journ., 1876, ii. p. 519. Howard, in his paper, records this case twice.
68	M.	11 yrs.	No; mother or drank while nursing.	No.	Yes.	Yes; marked.	Enlarged, granular, tough, and leathery.	Much enlarged.	Cirrhotic.	Scarlatina, measles, and various cells; frequent hæmatemesis; diarrhoea; veins enlarged over abdomen; ecchymosis and chymosis; petechiæ; irregular temperature, 99°-100.2°.	Died comatose.	Fox, Brit. Méd. Journ., vol. ii. p. 913, 1878.
69	M.	11 yrs.	Yes.	Not stated.	Not stated.	Not stated.	Well-marked cirrhosis.	Not stated.	Not stated.	Not stated.	Died.	Wunderlich, Handb. d. Path. und Therap., 2te Aufl. iii., 3te Abth. 313.
70	M.	11 yrs.	Not stated.	Not stated.	Yes.	Not stated.	Small and nodular; capsule thickened.	Not stated.	Enlarged and friable.	Psoas abscess; cerebral symptoms; brain anæmic; fluid in pleura.	Died.	Neureuter, Oestreichsches Jahrb. für Pediatr., 1877, viii. "Contribution to Psoitis and Interstitial Hepatitis in Children."
71	M.	12 yrs.	Not stated.	Not stated.	Yes.	Not stated.	Typical hobnailed; pigmented.	Pigmented.	Not stated.	Malaria.	Died.	Welch, Discussion of Howard's paper, Ibid.
72	M.	12 yrs.	No.	Yes.	Not stated.	Not stated.	39 ounces; smooth, tough, and hard.	3 ounces; normal.	Not stated.	Diarrhoea; symptoms resembled typhoid fever; liver considered syphilitic.	Died.	Legg, St. Barth. Hosp. Rep., 1877, xiii. p. 149.
73	M.	12 yrs.	Not stated.	Not stated.	Yes.	Yes.	Covered with yellow nodules; much fibrous tissue and fat.	Enlarged.	No albumen.	Hæmatemesis.	Died; coma.	Thorowgood, Lancet, 1877, vol. i. p. 569.

No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
74	M.	12 yrs.	Not stated.	Not stated.	Not stated.	Yes.	Alive at time of report; liver small.	Much enlarged.	Not stated.	Abdominal veins enlarged.	Alive at time of report.	Gordon, Dublin Quar. Journ. Med. Sci., xvii. p. 346.
75	F.	12 yrs.	Yes.	Not stated.	Yes.	Not stated.	Distinctly cirrhotic.	Not stated.	Not stated.	Veins of breast and abdomen much distended.	Alive at time of report.	Griffith, Howard's paper, <i>Ibid.</i>
76	M.	12 yrs.	Yes; to excess.	Not stated.	Yes.	Yes.	Not stated.	Not stated.	Not stated.	Had used alcohol to great excess.	Died.	Laure and Honorat, <i>Ibid.</i>
77	F.	12 yrs.	Yes.	Not stated.	Not stated.	Not stated.	Typical cirrhosis.	Not stated.	Not stated.	Consumed much spirits.	Died.	Wunderlich, <i>Ibid.</i> Handb. d. Path. und Therap., 2te Aufl. iii., 3te Abth. 313.
78	F.	13 yrs.	Not stated.	Not stated.	Yes.	Yes.	26 ounces; lobulated and much cellular tissue.	Not stated.	Not stated.	Hemorrhages from nose, stomach, and intestines.	Died in convulsions.	Hillier, Trans. Path. Soc., vol. vii. p. 227.
79	M.	13 yrs.	No.	No.	Yes.	Not stated.	Hard, puckered, and deformed, and irregular bands of fibrous tissue. Extreme cirrhosis.	Normal.	Normal.	Phthisis pulmonalis.	Died from diarrhoea.	Pye-Smith, <i>Ibid.</i> , xxxiii. p. 172.
80	F.	13 yrs.	No.	Not stated.	Yes.	Not stated.		Not stated.	Not stated.	Old and recent double pleurisy and peritonitis.	Died.	Moore, Lancet, 1881, vol. ii. p. 1087.
81	F.	13 yrs.	No.	No.	Yes.	Not stated.	Marked cirrhosis and limited to right lobe, although microscope shows diffuse interstitial hepatitis in whole organ. Stiffen, however, considers this first case in which process is limited to right lobe. Mixed cirrhosis.	Enlarged and soft.	Not stated.	Scrofula, bronchiectasia, milary tubercles, intestinal ulceration.	Died in complete con-sciousness.	Steffen, Jahrb. f. Kinderheilkunde, 1869, Bd. ii. 211.
82	Not stated.	13 yrs.	Not stated.	Not stated.	Not stated.	Not stated.	Cirrhotic.	Not stated.	Not stated.	Not stated.	Not stated.	Thénard de Göttingen, 1883.

83	F.	13 yrs.	Not stated.	Not stated.	Not stated.	Hypertrophic cirrhosis.	Not stated.	Not stated.	Not stated.	Chorea, acute endopericarditis, pneumonia, pleurisy.	Died.	Clin. de l'Hôp. des Enf. Mal., p. 317, 1884.
84	M.	14 yrs.	No.	Not stated.	Yes.	Small, lobulated, dense; mixed cirrhosis.	Not stated.	Not stated.	Granular.	Scarlatina, empyema.	Died.	Hayden, Dublin Quar. Journ. Med., vol. lxi.
85	M.	14 yrs.	Not stated.	Not stated.	No.	Enlarged.	Enlarged.	Enlarged.	Not stated.	Measles, epistaxis, fever; no malaria.	Died.	Durand, Journ. de Méd. de Bordeaux, June 1, 1884.
86	M.	14 yrs.	Not stated.	Not stated.	Yes.	22 ounces; typical cirrhosis; surface light yellow and granular.	6 ounces; probably lardaceous.	6½ ounces; no reaction with iodine.	Diseased lumbar vertebrae; double psoas abscess.		Died.	Price, Guy's Hosp. Rep., vol. xlii. (vol. xxvii, 3d Series) p. 326.
87	M.	15 yrs.	No.	Not stated.	Yes.	Small, nodulated, firm, stained.	Enlarged.	Not stated.	Hydrocephalus at fifteen months; chronic diarrhoea, epistaxis, hæmatemesia, purpura hæmorrhagica; bled from gums.	from exhaustion.	Died	Gordon, Dublin Quar. Journ. Med. Sci., xvii. p. 345.
88	M.	15 yrs.	Probable.	Not stated.	Yes.	32 ounces; hobnail; a remarkable specimen of simple cirrhosis.	22 ounces; capsule thick.	12 ounces; indurated, hard, and congested.	Peritonitis; ostitis of right femur.	Died comatose.		Price, Guy's Hosp. Rep., vol. 42, p. 329.
89	F.	15½ years.	Not stated.	Not stated.	Not stated.	41 ounces; indurated; commencing cirrhosis.	Small and hard.	14 ounces; epithelial nephritis.	Mitral stenosis; acute peritonitis.	Died.		Price, Ibid.
90	M.	16 yrs.	Not stated.	Yes.	Yes.	Marked perihepatitis; localized areas of fibrous deposit.	Not stated.	Not stated.	"Ailing life," from early life.	Died.	Satterthwait, Ref. Hand. Med. Sci., iv, p. 557, 1887.	
91	Not stated.	Child.	Not stated.	Not stated.	Not stated.	Cirrhotic; nodular.	Not stated.	Not stated.	Typhoid fever; pneumonia, old peritonitis.	Died.	Bequerel, Arch. Gén. de Méd., 3d Series, 1840, iii. p. 58.	
92-95	Not stated.	Children.	Not stated.	Not stated.	Not stated.	Two of these four cases were tubercular.	Not stated.	Not stated.	All four cases were in infants.	Died.	Rilliet and Barthez, Trait. Clin. et Prat. des Mal. de l'Enf., 2 vol. p. 23.	



No.	Sex.	Age.	Alcohol.	Syphilis.	Ascites.	Jaundice.	Liver—Microscopic and Macroscopic Appearances.	Spleen.	Kidneys.	Previous or Concomitant Disease.	Condition at Death.	Observer's Name.
96	F.	2 yrs. 10 mos.	No history obtainable.	No history obtainable.	No.	Yes.	Enlarged and knotty to palpation.	Much enlarged.	1017; no albumen; bile test.	Jaundice noticed at ten months of age; well marked; disappeared in three weeks; since then quite well until two months ago.	Delirium; no post-mortem.	Goodhart.*
97	F.	7 yrs.	No history obtainable.	No history obtainable.	No.	Conjunctivae only.	Dulness diminished.	Much enlarged.	1015; no albumen.	Quite well until scarlatina three years ago; never well since; a typical case of cirrhosis, with the blasé tippler's face; congested capillaries; bleeding from capillaries.	Left in January; state as on admission.	Goodhart.*
98	F.	7½ yrs.	No (?).	No.	Yes.	Conjunctivae only.	Large; capsule thick; markedly interstitial; much nodulation, large and irregular.	Much enlarged.	Large; no albumen.	Pertussis badly; abdominal swelling began two years ago, soon after par-tussis; tapped several times; "was ordered whiskey by the doctor after the droopy began."	Comatose.	Goodhart.*
99 100	M.† M.	12 yrs. 15 yrs.	Yes. Yes.	No. No.	No. Slight.	No. Yes.	.....	Enlarged.	No albumen.	Left hospital unimproved.	..... .....	Goodhart.* Goodhart.*

\* These five cases were kindly furnished me in a personal communication from J. F. Goodhart, London, England, Physician to Evelina Hospital for Sick Children, Physician and Lecturer on Pathology in Guy's Hospital, etc.  
† Four-story.—Gossett's case, aged eighteen (*British Medical Journal*, 1871, II. p. 546), and Price's cases, aged respectively eighteen and nineteen (*Guy's Hospital Reports*, vol. xiii. p. 333, are, on account of their age and condition, closely approximating the adult, not accorded a place in the present study.

## **Clinical Memoranda.**

### **A CLINICAL LECTURE ON SCARLATINAL ANASARCA.**

BY LOUIS STARR, M.D.,

Philadelphia, Pa.

GENERAL anasarca is by no means an uncommon occurrence during childhood. It may result from several causes: thus, anæmia from malnutrition or bad feeding may produce it; again, it may be one of the symptoms of organic cardiac disease or chronic renal disease, especially the form occurring in conjunction with amyloid degeneration of the liver, and commonly developed during the course of long-standing suppurative disease, especially of the bones and joints; most commonly, however, it occurs as a sequela to scarlatina; you doubtless have often read or listened to descriptions of the symptoms of this disease. Therefore I will not occupy your time with the details of the short incubation; the usual absence of prodromes and the sudden onset; the vomiting that ushers in the attack; the quick development of signs of severe illness; and the characteristic high temperature, frequent pulse, and eruption. Nor will it be necessary to enter into a description of the modifications of the disease, for, like every other affection, scarlatina is subject to great variations in type and severity. Let me call your attention, however, to the fact that the scarlatinal poison, while it often strikes at the nerves, the pharynx, the mucous membrane of the gastro-intestinal tract, and the lymphatic glands, has a special tendency to affect the skin and kidneys. The rash is not a mere cutaneous hyperæmia; it is also an exudation into the rete mucosum. The cells in this structure are proliferated and swollen and the sweat-glands become distended by increase of their cellular contents. Again, according to Klein, changes in the kidneys take place very early. In the first week of the disease proliferation of the nuclei in the Malpighian tufts and in the muscular coat of the arteries can be detected, as well as hyaline degeneration of the intima. At the same time there is hyaline thickening of the walls of the Malpighian capillaries, and cloudy swelling of the epithelium in some of the convoluted tubes. At a later stage the cloudiness and swelling of

the tubal epithelium increases, and fatty degeneration takes place; infiltration of lymphoid cells occurs into the interstitial tissue around the tubules, and the tubules themselves are filled with hyaline casts.

From these facts we may infer two things: first, that the function of the skin is crippled and more eliminative work thrown upon the kidneys, for the relation of these two organs is very close. Second, that, even early in the disease, the kidneys are directly affected, and consequently more prone, under extreme strain, to pass into the condition productive of albuminuria and anasarca,—the strain usually comes in the form of chilling of the surface.

Bearing these statements in mind, you must next understand that anasarca may occur at several periods during the course of scarlatina: 1st, it may be developed during the febrile stage; 2d, it may appear while desquamation is going on in the third week of the disease; and, 3d, it may not be developed until much later, in the sixth or eighth week, for instance.

In all the dropsy it is usually attended by albuminuria, but we occasionally meet with (4th) dropsy without albuminuria.

1st. If the temperature be very high during the eruptive stage and the urine be daily examined, it is not uncommon to detect the presence of albumen, but nephritis with its attendant urinary changes and dropsy are rare at this stage of the disease. Nevertheless cases are on record in which nephritis has set in suddenly, as early as the fifth day. Here the cause is undoubtedly the direct action of the fever-poison upon the renal tissue, and the outlook is very grave. The appearance of the urine and the general symptoms are identical with those to be presently described.

2d. Albuminuria and anasarca may appear during the stage of desquamation, and while this process continues the urine should be tested daily to anticipate any serious renal complications.

Usually the attack is sudden, beginning with vomiting, fever, and noticeable pallor of the face. The pulse is often slow and commonly irregular; the cardiac impulse is displaced outward, the first sound may be thick and murmurous or accompanied by a distinct systolic bruit, and the second sound is accentuated. The urine quickly presents characteristic appearances; it becomes scanty, is voided frequently, may be either smoky or port-wine colored from the presence of pure blood, and on standing deposits a dirty-brown sediment. When tested it is found to be highly albuminous, and the microscope shows blood-corpuscles, large epithelial and hyaline casts, and much granular detritus. Soon there is a peculiar



appearance of the upper part of the face and dorsum of the fingers, these regions shining as though greased; later they, together with the subcutaneous tissue generally, become oedematous and puffy.

When the disease runs a favorable course, the albumen may remain in the urine in quantity for four or five days; but it quickly diminishes, the blood disappears, the urine increases in amount, urates begin to be passed freely, and gradually all the symptoms disappear.

Unfortunately, there are many other less-favorable cases. The disease may set in with convulsions, or the urine may become gradually more scanty, the dropsy more extreme, and convulsions supervene after four or five days. Convulsions are necessarily serious, and are often fatal; but in many cases they subside; then the patient remains drowsy for a few days, and gradually comes round again.

At another time a child will seem to be doing well, with but a moderate amount of dropsy and albuminuria, when, somewhat suddenly, its breath becomes short, coarse râles appear in all the bronchial tubes, and death follows quite rapidly, and not uncommonly suddenly and unexpectedly. These are the cases that are said to die by acute oedema of the lungs, but sometimes, at any rate, there is primary acute dilatation of the ventricles of the heart, and with this oedema of the lungs and sudden death. In other cases the serous cavities become full, in conjunction with extreme anasarca, a state of things to be looked for in the more chronic cases.

The above group of symptoms, which is generally embraced under the term "scarlatinal nephritis," may arise in cases that have been most skilfully managed and that have been confined to bed from the beginning of the attack, but they far more commonly occur when there has been careless exposure of the body surface to cold during the stage of desquamation; in other words, when the patient has been allowed to leave his bed too soon. I think, therefore, that while the direct action of the fever-poison on the kidney is occasionally the sole element of causation, there is more frequently a combination of this with chilling of the surface. Such an accident will primarily determine the blood to the interior of the body and congest the kidneys, and secondarily, by diminishing the functional activity of the already inactive skin,—for the skin is inactive during the process of desquamation,—throw more eliminative work upon the crippled kidneys, a combination of conditions most favorable to the development of nephritis. There is, too, another etiological factor too apt to be overlooked,—namely, the early resumption of a meat diet to meet

the demands of the craving appetite that often appears upon the subsidence of the initial fever. As the kidneys normally take a considerable share in the elimination of albuminoid waste, such feeding is very prone to overwork them and, since excretion is always attended by increased blood-supply, to induce congestion and inflammation.

3d. In hospital practice yet another condition must be mentioned as the most largely prevailing of all,—viz., where children are brought for dropsy many weeks after some indefinite attack of illness, which we can only suppose has been scarlatina. In private practice the condition is not nearly so common, as greater watchfulness is the rule. In these cases also the onset of the renal affection is insidious. No history can be given of any striking alterations in the character of the urine at any time, and with considerable albuminuria there is usually free diuresis and little alteration of the color of the urine. A retrospective diagnosis is often possible in these cases from the peculiar appearance of the fingers and toes. Desquamation continues here long after it has ceased in other parts of the body, they also, often present a smooth and shiny surface, as if smeared with oil.

The patient I now bring before you is a typical illustration of this group of cases.

This boy, about five years of age, was brought to the hospital because his mother noticed that his face, hands, feet, and legs were becoming swollen. When first interrogated she stated that there had been no precedent illness, but on closer questioning she admitted that her child was suddenly taken ill about a month before with general malaise, fever, and anorexia. These symptoms being noticed in the morning, he was put to bed. All the following afternoon and night he vomited, and the next day was covered with a red rash. This disappeared in several days, and, being apparently well again, he was allowed to get up, to play about out of doors, and to eat all he wished from the table. Two weeks later the eyelids and extremities were noticed to be slightly swollen, and this gradually increased up to the time he was brought to the hospital.

As you see the case to-day, you will notice that the face is very pale, that the eyelids, bridge of the nose, and dorsum of the hands are puffy, and that there is considerable œdema, with pitting on pressure, of the feet and legs. The cervical lymphatic glands are enlarged. His tongue is coated, there is anorexia, constipation, restlessness at night, and he often complains of dull pain across the loins. When we came to investigate the condition of the urine, the mother stated that when the swelling first appeared the secretion was very scanty.

On his first visit to the hospital a specimen showed high specific gravity, a dark smoky color, and abundant albumen. The urine now is passed more freely, and as you see it to-day in this test-tube you will notice that it is of good color and apparently healthy; but the specific gravity is higher than normal, and when I apply Heller's test you will observe that there is a very distinct ring of albumen. There is one more point to which I would especially draw your attention, for it proves that the œdema and albuminuria are the sequelæ of an unrecognized attack of scarlatina; this is the still very evident desquamation to be observed about the fingers and toes.

One could hardly find a better example of latent scarlatinal dropsy, for, in the first place, we have the history, which you will find so often repeated, of a sudden fever and a rash, that is thought to be nothing; next we have an account of œdema beginning in the face, which is almost uniformly the case in this latent form; again, we have the albuminuria, and, finally, the desquamation of the fingers and toes, to enable us to make a certain retrospective diagnosis.

Your attention may also be drawn to two elements which you will find to be the usual etiological factors in these cases,—namely, exposure and improper feeding.

4th. While there can be no doubt that œdema, due to anasarca, may follow scarlet fever, no such cases have come under my observation, and I think that dropsy without albuminuria following scarlet fever must be very rare. I have seen two cases of post-scarlatinal anasarca in which the urine, though non-albuminous, contained casts, and it seems best to insist that the absence of these elements be proved by careful microscopic examinations before declaring a dropsy following scarlatina to be independent of renal disease.

The prognosis of scarlatinal dropsy depends upon the grade. Sudden onset during recovery from the fever, especially when attended with suppression of urine, is of very grave import. If œdema of the lungs, acute dilatation of the heart, with very weak pulse, coma, or asthenia supervene, the prognosis is extremely bad. Even after recovering from this severe condition, the system is left in such a weakened state that it is impossible to say what may occur in the next four or five years.

As to treatment, the most important point is to guard against the attack altogether. For this reason a scarlatinous patient should be kept in bed until the end of the sixth week, and even then the prognosis is to be guarded, as there may be an insidious disease to be developed within a year. To put the matter in a nutshell, keep the child in bed, sufficiently covered, for at least six weeks, the temperature of the room



being from 64° to 68°F., and let the diet be liquid and chiefly of milk. It is well to continue some form of iron all through this period, preferably the tincture of the chloride or Basham's mixture. Digestion is to be aided by pepsin if necessary, and the bowels must be kept open by glycerin suppositories, or simple enemata. During the stage of desquamation, daily anoint the entire surface, including the scalp, with an ointment of

R. Acid. carbol., gr. xx ;  
Thymol, gr. x ;  
Vaseline vel ung. simp., ℥i. M.

Then put in a warm bath for five minutes, protecting from cold, and put to bed, wiping the body dry beneath the bed-clothes. This has the effect of hastening desquamation, and of disinfecting and preventing the dispersion of the scales, which are active vehicles of the contagion.

In the case before you we will make the diet light, consisting of milk, broths, and a limited quantity of bread. He must not be taken out of doors until the oedema and albuminuria have disappeared. Then in clear and dry weather he should have exercise in the open air, short of fatigue. A warm bath, of temperature between 95° and 100° F., is to be given twice a week, preferably just before going to bed. A fluidrachm of Basham's mixture should be administered thrice daily, and the bowels must be kept regular; for this purpose two drachms of milk of magnesia may be given in the morning as required.

In nephritis of acute type it is necessary to use more active means: confinement to bed, milk diet, poultices to the loins, and, if suppression of urine has occurred, four dry cups over the renal region, with a saline purge, and some remedy to act on the skin. To accomplish the latter indication, steam baths and jaborandi combined with citrate of potash are most efficient, as in the following :

R. Ex. jaborandi fld., f℥ss ;  
Liq. potass. citrat., q. s. ad f℥iij. M.

Sig.—Teaspoonful every four hours at the age of six years.

Digitalis in appropriate doses may be added if the heart be weak or irregular. If convulsions occur, bromide of potassium and chloral must be used. For a child of six years, fifteen grains of bromide and two grains of chloral suspended in mucilage may be given by the rectum. Diuretics are recommended by some practitioners, but they have always seemed to me to add to the work of the already overburdened kidneys, and to do more harm than good.

## DENTITION: A CLINICAL LECTURE.

BY WM. T. PLANT, M.D.,

Professor of Pediatrics in Syracuse University.

GENTLEMEN,—Our talk this morning will be of dentition, or, as some of the old medical authors put it, “the breeding of the teeth.”

Of the two sets with which we are furnished at different periods of life, the deciduous, or milk, or temporary set, for it has all these names, will chiefly engage our attention.

The period of the first dentition is universally regarded as a time of considerable danger. Do you ask why it is so? Probably not, as many have thought, solely because of the irritation and nervous erethism produced by the advancing teeth, for dental evolution is but one of the activities of this particular time of life. The brain is growing so fast that it doubles its weight within the first two years, and the other parts of the cerebro-spinal and muscular systems are undergoing scarcely less rapid development. During this time, too, such changes are taking place along the digestive tract that the infant is ready at length to be weaned from its mother and to be put upon a varied and partially solid diet. This activity of all the functions of the body, of which dental evolution is an important part, renders the child more susceptible than at other times to pathological processes.

Though the crowns of the teeth are formed in the body of the jaw early in embryonic life, there is little or no further advance until some months after birth. It is not so with animals. Their lives being short as compared with ours, they are ready much earlier for an independent existence. In ruminants dentition is completed within the first month, and in many, if not in most other animals, within three months after birth.

But the human infant is from six to eight months old before the first pair of incisors has pierced the gum of the lower jaw. A few weeks later the corresponding teeth of the upper jaw appear; then the upper lateral, to be soon followed by the lower lateral, incisors. Usually all the cutting teeth are visible before the end of the twelfth month. The child is more than a year old—twelve to sixteen months—before it has its first molars or grinders, a plain indication that it ought not to be fed with food requiring grinding before that time. Between sixteen months and two years the canines, and not long after that—two to two and a half years—the last molars,

appear. The little one has now its full allotment of twenty temporary teeth. You will not fail to notice that there is a considerable period of complete dental inactivity intervening between the eruption of the several pairs. Were it otherwise, dentition would be a much more troublesome and dangerous process than it is. Its completion marks the point where infancy ends and childhood begins.

Such is the usual and regular course of the first dentition ; but I must tell you that there are rather frequent departures from that order. For instance, the central upper incisors sometimes show themselves before the lower ones ; or the lateral incisors before the central ; or the first molars may precede the lateral incisors.

The teeth may also come out of the usual time. It is not a very rare circumstance for the first pair to be cut one, or two, or even three months earlier than the time I have given you, and infants have even been known to show a pair of incisors above the gum at birth. An instance of that sort you may find reported in the *ARCHIVES OF PEDIATRICS* for 1887, page 48. It is, I believe, a fact that a very early appearance of the first teeth is apt to be followed by so long a pause that the next and subsequent ones appear at about the usual times. Though I have not observed it in my own practice, it is said that tuberculous and syphilitic babies are wont to be precocious as respects their teeth.

But dentition is, I think, oftener delayed than hastened. Children with rickets are notoriously laggard in the way of teething. A child so affected may be eighteen months, or even more than two years old before the central incisors are visible. Some infants, and in some families all the infants, even when quite well, are far behindhand with their first teeth. I have lately known an exceptionally healthy child of healthy parents whose first incisors were not cut until she was full fifteen months old. It has often been observed that when the beginning of dentition has been so tardy, the work thereafter moves rapidly forward, and is completed about the usual time.

I have already stated that the crowns of the teeth are formed in the jaw long before birth. When teething begins, the rapid growth of the root pushes the crown upward through the jaw and gum. Many believe, and with apparent good reasons, that there is some force besides the elongation of the fang to account for the sudden uplifting of the crown. Such reasons are to be found in the facts that a tooth whose root is still rudimentary will sometimes pierce the gum ; and that the crown of a tooth in active evolution travels farther than the increasing length of the fang alone would carry it.



Though a physiological process, dentition is often attended with so much pressure and hyperæmia as to cause both local and general symptoms. Some infants, indeed, get their teeth so easily that there are no signals of discomfort to herald their coming, but this is not the rule.

We come now to consider the symptoms of dentition, or, if you please, of difficult dentition. They are both local and reflex or general.

The earliest local token of teething is a marked increase in the salivary and mucous secretions of the mouth. Until after the third or fourth month the salivary glands are almost inactive, but as soon as, or even before, dental activity begins, the mouth becomes full of fluid, which, as the infant has not yet wit enough either to swallow or eject, slavers over the chin and front of the chest. When the tooth has come through, the drivelling becomes less, but increases again with a renewal of active dentition.

There are also evidences of local irritation and uneasiness. Often the exact location of the underlying tooth can be made out by the redness, heat, and swelling of the gum. Not seldom does the inflammation spread itself over a considerable portion of the mouth, causing either simple or ulcerative stomatitis. The infant's discomfort is shown in munching and sucking movements of its jaws and lips; in attempts to crowd its fists into its mouth; in rubbing its gums and in biting on all hard substances within reach. Sometimes the gums and mouth are so tender that the infant does not use its jaws in biting or nursing. The lymphatic glands under the jaw are apt to become inflamed and enlarged as a result of teething. A mother brings to your office her child, with a swollen neck. Thinking it has scrofula, she will ask for blood-purifying medicine. If it is between five and thirty months old, you will do well to examine the mouth, for quite likely the trouble is there. Glands that are enlarged from dentition do not often suppurate, and you will generally find that the swelling abates when the teeth that caused it have come through.

Fever is a frequent attendant on teething. It may be slight and of little account, but not seldom it is so high as to cause apprehension of danger. Perhaps its most distinguishing feature is its erratic course. It comes and goes regardless of the rules that ordinarily govern febrile movement. It may last but for a day; it may continue for many days; it may come and go several times before the teeth that caused it have erupted. The morning temperature may be as high as, or higher than, that at the close of the day. I have sometimes thought

that a high morning temperature was rather characteristic of the pyrexia of teething. In other affections, an elevation to  $104^{\circ}$  or  $105^{\circ}$  in the early part of the day would denote a serious condition. In dentition it is not very uncommon or of particularly grave import.

Prominent among the phenomena of dentition are those that indicate an irritable and highly impressionable state of the nervous system. Unusual fretfulness; fits of screaming; eyes half opened and rolled upward in sleep; night-terrors; obstinate wakefulness; jerkings of muscles; squinting; carpo-pedal spasms;—these and other like phenomena show that the “nerves are set on edge,” and are not infrequently the forerunners of general and alarming convulsions.

In the hot months the most common and troublesome concomitant of teething is an intestinal flux. It is doubtless, so far as the teeth have to do with it, a result of reflected irritation. In summer it is the constant menace of the whole infant population, especially of bottle-fed babies in cities. Very often there is gastric as well as intestinal irritation, and the vomiting may be as annoying as the diarrhoea. Occasionally the onset of the disorder is so abrupt and the symptoms so violent and unrelenting, that it is properly called cholera infantum. In these, and even in cases that are less severe, there is extreme thirst and restlessness and rapid wasting.

But in cold weather the air-tubes are much more likely than the bowels to receive the brunt of the reflected irritation. You will notice, too, that during dentition many infants are extremely sensitive to drafts and temperature changes. Another cause of taking cold is in the wetting of the clothing over the chest by the copious drooling. For these reasons, a “tooth cough” is extremely common in damp and wintry weather. It has nothing, so far as I know, to distinguish it from other bronchial catarrhs, unless it is its peculiar obstinacy under treatment.

Less frequently than diarrhoea or bronchial catarrh is a disordered urination due to dentition. It may show itself under different forms. There may be a constant desire and effort to empty the bladder when there is nothing in it, or a spasmodic retention, or an annoying dribbling from incontinence. These symptoms will not often continue for more than a day or two at a time, but they may recur again and again before the teeth that caused them have erupted.

Now and then there is a troublesome otalgia, apparently the result of a reflected irritation, or an acute coryza, as shown by snuffling, sneezing, and red and watery eyes. In other cases the irritation expends itself in a surface eruption of

eczema, or erythema, or urticaria, especially about the face and scalp,—the “tooth rash” of nursery talk.

*Second dentition.*—Though the getting of the first set of teeth is the occasion of so much discomfort and trouble, the period of its life is short,—only about five years. By the time the child is a half-dozen years old its teeth begin to loosen and fall out. In general their decadence is in the order of their first appearing. The serious local and sympathetic disturbances of which we have been speaking are almost unknown to the second dentition. Now and then there is an unwonted tendency to gastric and intestinal irritation and nervous disturbances, but seldom, if ever, are these symptoms so pronounced as to make the physician apprehensive for the child's safety.

*Treatment.*—Having local and general symptoms, there must also be local and general treatment. When the drooling is copious, saturation of the clothing over the bosom should be prevented by a slavering-bib covered with rubber cloth or other impervious material. An over-secretion of saliva may be restrained by belladonna. As little as a drop, or even a half-drop, of the tincture once in four hours may do as well as more. A teething child likes to press its gums against hard substances. The rubber ring now made for the purpose answers it better than the bit of wood or the coin of my infant days. The German pretzel does very well also. It is a fashion with mothers to try to hasten the cutting of the tooth by rubbing the gum with their own thimble fingers.

Until recently it was thought to be the most important part of the local treatment to cut the gums. This operation consisted in dividing the gum over an advancing tooth, with the purpose of making a way for it. It is now known to be needless and useless in nearly all cases, and possibly because of that it has fallen into an unmerited desuetude. Though it is rather the fashion now to condemn the use of the gum-lancet altogether, I am of the opinion that when a tooth is nearly through and the gum is seen to be tense over it, a free cross incision may liberate the crown and give quick relief to a suffering child. Neither do I think it quite impossible that by this simple means convulsions and other alarming reflex symptoms having their cause in difficult dentition may sometimes be prevented or quickly ended. I would advise you not to use the lancet for a simple elevation of the gum, for that is no sure indication that the crown is near the surface. Such an appearance may come and go several times before the tooth has erupted; in fact, we may never safely predict the speedy cutting of a tooth unless its sharp edge can be felt beneath the gum. If there is gingivitis, scarifying the gum by light



touches of the lancet will lessen the hyperæmia and afford some relief.

Cervical adenitis due to dentition usually subsides of itself when the teeth that caused it have erupted. If troublesome, I usually apply tincture of iodine once in the day, and a poultice, preferably of ground flaxseed, at night.

For the moist eruptions about the head and face you may apply oxide of zinc ointment, black-wash, etc., and if you can always effect a cure before the teeth that caused it are through, your success will be greater than mine has been.

In the general treatment you will frequently be importuned to prescribe for a condition of feverishness, nervous erethism, and fretfulness that makes many a teething child a terror to the household. Here the bromides will render you good service. I commonly give from two to five grains in solution with syrup flavored with peppermint or winter-green, repeating as may seem necessary. If the infant is over-wakeful an equal quantity of chloral may be given in similar solution. At bedtime it is my habit to order a hot foot-bath and a grain or two of Dover's powder. I may here say that the Dover's that I use with children is made with potassium bromide in place of the inert potassium sulphate. You will not neglect to avail yourselves of the power that aconite has to reduce fever. Give it in *small* doses, but repeat often. Add from five to twelve drops of the tincture to a full goblet of water. Give a teaspoonful every fifteen minutes for two hours; then every hour.

As to the diarrhœa that so often attends dentition in the hot months, there is a wide-spread belief among the laity that it is salutary and need not be interfered with. We may perhaps allow that a moderate looseness tends to prevent cerebral hyperæmia and some of the unpleasant reflex symptoms, yet it must not be forgotten that a profuse diarrhœa with dentition is as exhausting and as certainly fatal, if not checked, as though due to any other cause. So, if the movements should exceed three or four in the day, you will do well to try to limit their over-frequency. The particular means will be mentioned when we come to speak of summer diarrhœa. You will have occasion to notice that a flux from teething is less amenable to treatment than that from some other causes, as over-eating.

The "tooth cough" also is apt to be rebellious under treatment. Often you will succeed better with remedies that are sedative to the nervous system than with the ordinary expectorants.

When an infant of teething age has convulsions and the

cause is not evident, always examine the mouth. If you find the gum tense over a crown that can be plainly felt or seen, there can be no harm in making a crossed incision through it. Possibly you may thereby lessen the tendency to fits. Very generally, however, you will need to resort to other treatment, as the hot bath and the bromides, with or without chloral. When there are threatenings of convulsions it is my habit to treat them with a light dose—one to three grains—of calomel, or hydrargyrum cum creta—two to five grains—with about the same quantity of powdered rhubarb, or followed after some hours by a dose of castor oil or castoria. Besides that, I give one of the bromides in such doses and at such intervals as may be necessary to control the convulsive tendencies.

If you meet with annoying urinary symptoms as a result of dentition, you will, I think, get more assistance from the bromides, either alone or with chloral, than from diuretics.

During the whole period of the first dentition particular care should be given to the diet, because the child is then, more than at other times, prone to digestive disorders.

The second dentition is generally accomplished with so little local and systemic perturbation as to need no treatment, though the wisdom-teeth, as some of us will remember, are capable of causing "trouble and sorrow."

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## THE SURGICAL TREATMENT OF ERYSIPELAS —A SUCCESSFUL CASE IN AN INFANT.\*

BY DILLON BROWN, M.D.,

New York.

IN view of the encouraging results obtained in the treatment of erysipelas by the more recent operative methods, the following case seems worthy of being placed on record.

Grace E. M., aged five and a half months, the daughter of Dr. G. C. H. Meier. She had a port-wine mark on the tip of the left index-finger extending to the first joint. On March 28, after an injury to the finger, a dermatitis was developed, which ran a sluggish course, but resulted in an almost complete cure of the port-wine stain.

On April 1 the baby became feverish and restless, and was evidently suffering from pain. There was a tender red and thickened spot over the right tibia, which about one week later was incised and a half ounce of pus and blood evacuated. Both the finger and the leg were covered with gauze, saturated with a solution of carbolic acid (3i to

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\* Read before the Pediatric Section of the New York Academy of Medicine, May 8, 1890.

Oi), and, in a few days after this dressing was applied, the child began to grow pale and languid and the urine stained the napkins a dark violet hue. These symptoms disappeared rapidly after this dressing was removed, and to this may be justly attributed part of the child's extreme prostration.

On April 11 a small characteristic erysipelatous patch appeared on the right ankle, four inches below the opening of the abscess, and was accompanied by fever, headache, vomiting, and marked prostration. In spite of the carbolic acid applications, a thick ring of collodion painted entirely around the leg above the inflammation, and the usual local and constitutional treatment, the erysipelas continued to extend and the patient's condition grew alarmingly worse.

On April 13 the inflammation had spread posteriorly to the popliteal space, on the outer side of the leg to three inches above the knee, and on the inner side to the upper edge of the patella. The baby was pale and extremely prostrated, and had severe crying spells which were apparently due to headache. The rectal temperature was 104.5°, and the pulse, which was very weak and thready, was 178. The child was seemingly going into a condition of collapse, and we felt that it was a hopeless case unless the extension of the disease could be stopped.

Under chloroform anæsthesia, the Kraske-Riedel fence was made with a scalpel in the healthy tissues above the erysipelas and completely encircling the thigh. These scarifications were dressed with gauze wet with a solution of bichloride of mercury (1 to 1000). Both before and after the operation the thigh was thoroughly scrubbed with a solution of the same strength. Two hours later the site of the operation was marked by a red, elevated, angry band, which seemed to be erysipelatous, but which, probably, was due to the irritation of the bichloride of mercury. The inflammation rapidly travelled into the scarified area, but did not pass above this barrier. The next morning the baby was better in every way. Temperature 100°, pulse 120 and stronger, eyes brighter, and she took considerable notice of her surroundings. In three days there was no anxiety in regard to her condition, and she made a rapid recovery.

## PYÆMIA FOLLOWING MAMMARY ABSCESS IN AN INFANT THREE WEEKS OLD.

BY FRANK C. BRESSLER, M.D.,

Baltimore, Md.

I WAS asked to see an infant,—female,—and obtained the following history: After its birth, the midwife stated that the breasts of the infant were somewhat swollen and contained some milk. She accordingly squeezed them, with the result of the escape of a trifling amount of serous fluid.

The child showed no particular discomfort for several days, but now it seemed somewhat fretful and slightly feverish. Examination showed that the left breast was reddened and inflamed. It was likewise swollen. The swelling and in-



flammation progressively increased so that, on the fifth day of its birth, an abscess was diagnosticated by the midwife. By the constant applications of flaxseed poultices it finally opened with the escape of a moderate amount of pus. Owing to the breast remaining inflamed, the parents requested me to see it. I saw it January 2, 1890, the infant being ten days old. Upon examining the breast, I found the nipple and areola separated from remaining glandular structure, sensitive to pressure and quite infiltrated. The child appeared haggard, cross and fretful, and somewhat anæmic. The wound was constantly discharging and seemed irritated. I ordered the wound to be cleansed several times daily with an antiseptic solution, and had advised that an ointment of boracic acid should be applied in between the times of the washing.

I did not see the infant again until January 13, 1890, when the father called at my office, asked me to see it, stating that it had grown worse. I called and observed that a swelling was present on its left ring-finger, between the second and third phalangeal joints, which had been an abscess and was still discharging pus. I was told by the parents that shortly after I had seen the baby a swelling suddenly appeared at the above-mentioned finger, which rapidly passed into an abscess and opened itself. This was followed in a day by a swelling above the right wrist-joint and over the ulna at about the junction of the shaft with its lower epiphysis. This rapidly enlarged. It was now noticed that the upper half of the anterior surface of the left thigh was infiltrated, feverish, and reddened. Subsequent examinations proved it to be a deep, infiltrating abscess, which in all probability originated from the hip-joint, but allowed pus to escape and infiltrate the muscles of the upper half of anterior portion of thigh, there setting up secondary inflammation of these muscles and skin. Both right and left shoulder-joints now began to swell and become inflamed. These were closely followed by the appearance of still another abscess of the left elbow-joint, the swelling being best marked posteriorly. It was likewise noticed that both labia majora were inflamed and oedematous, but no signs of fluctuation could be discovered; hence I am not able to say with certainty whether pus was secondarily forming here or if some other trouble was back of this condition of the labiæ.

The abscess which had formed over the right lower portion of the ulna had been so destructive as to separate the epiphysis from the shaft. The epiphysis floated about in the pus the same as if a foreign body had been thrust into a cavity.

The child's condition was serious; its skin was cool and jaundiced. Its pains must have been great, as it moaned pite-

ously. Emaciation had taken place; still it would nurse the breast. Diarrhœa had been a marked feature for several days. I stated to the family that the prognosis in this case was bad, and all that could be done was to relieve the most distended abscesses. The family readily assented to the abscesses being opened. When the knife opened the one over the ulna, the quantity of pus escaping was very much; it partook of the curdy variety; and considerable blood was lost from cut surfaces before the hemorrhage was controlled. Both the shoulder-joints were opened as well as elbow-joint. The quantity of pus which escaped from these three abscesses was considerable, and partook of the same nature as that of the ulna. I saw that nothing had been gained, so far, by the opening of these abscesses; in fact, my little patient seemed to be sinking, so I desisted from opening any more. Placed child on stimulants; applied heat in shape of hot bricks and bottles filled with hot water.

These remedies, however, had no influence in checking the exhaustion and shock, the child dying on the morning of the following day, January 14, 1890, making the child about twenty-one days old.

As far as I could ascertain, no chills had been noticed during the whole illness; however, the child was constantly feverish. I am not able to state to what degree its temperature reached, since I failed to take it by my thermometer.

I tried to obtain a post-mortem examination; this was refused me. I, however, examined it after death, and found the liver enlarged so that its lower edge extended two inches below the borders of the ribs. I could distinctly outline it all the way around to the back, could move it easily about by counter-pressure. The spleen was very much enlarged, extending into the epigastric region as far forward as the median line and downward nearly to the crest of the ilium. It could likewise be plainly lifted up and moved about easily. All of the remaining joints, previously not opened, presented decided fluctuation.

This case is one of more than ordinary interest, since abscess of the mammary gland is not very frequent; in fact, many physicians of large experience do not see a case of this character in infants during their entire practice.

Another point of interest is the history of secondary abscesses in the various joints following closely upon the development of this mammary abscess. From this we can conclude that the relationship of the multiple abscesses depended primarily upon the mammary abscess; hence this case must have been a pyæmia, secondarily following this mastitis,

since no other source was present from which infection could follow. The only point might have been the umbilicus, but this appeared perfectly healthy, and had not shown any signs pointing possibly to it as the nidus from which septic absorption took place. Another point of no little importance is the comparative rarity of pyæmia following a suppurative mastitis. Upon looking up the works at my disposal, I am unable to find any reference to this condition, showing, I think, that pyæmia must be comparatively uncommon after mastitis in infants.

The point of most importance is the propriety or justification of indiscriminately squeezing every breast that appears swollen at birth. It seems to be the delight of the midwife, nurse, or some old neighborly women, to examine the breasts immediately, with the result of giving them the necessary squeeze, and thus triumphantly exhibit a little milk which naturally is found on hard squeezing in almost all infants' breasts. If the squeezing only ended here; but no, next day the poor little victim has to go through the same process; if fortune is favorable no evil results; if otherwise, evil follows as above narrated. This is a pernicious practice and ought to be stopped, since an organ so tender as the breast can certainly not be so rudely handled. As a result of this practice, I tell the one who is going to wash the baby that the breasts must not be touched until I have seen them. If any squeezing is to be done I will do it, and I insist on my advice being followed. I think this a point of great interest, and, teaching mothers the dangers that may follow such a practice, many infants' lives can be saved that otherwise are made unhappy by the pain, later on by deformity of breast, besides the possible loss of life.

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## NEW YORK ACADEMY OF MEDICINE.

### SECTION ON PEDIATRICS.

*Stated Meeting, March 13, 1890.*

L. EMMETT HOLT, M.D., *Chairman.*

#### FEMORAL HERNIA IN AN INFANT SEVEN MONTHS OLD.

DR. MILLIKEN presented an infant, sixteen months old, which had had a swelling now recognized to be a femoral hernia since the sixth or seventh month of age. It was an extremely rare condition in so young a child. A hank of yarn was at present being used in the place of a truss.



GONORRHOEA OCCURRING IN A BROTHER AND SISTER  
AGED RESPECTIVELY SIX AND EIGHT YEARS.

Dr. T. M. Bull was to have reported the cases, and in his absence the histories were read by Dr. Crandall. The first patient, a boy aged six, was brought to the clinic February 6, with a urethral discharge dating from about Christmas. Pus flowed from the urethra which on examination was found to contain numerous gonococci. Five days after the visit of the boy the sister, aged eight years, was brought to the clinic, with a discharge which had been discovered about January 8. There was considerable swelling of the vulva and flow of pus from the vagina which was found to contain gonococci in numbers. Both cases were completely cured by March 1.

It was probable the boy had got gonorrhœa from his uncle, with whom he slept and who had the disease, and later the sister got it from the boy, since intercourse was acknowledged by both parties. The boy was strong, active, rather large for his age, and unnaturally intelligent regarding matters which boys of his age should know nothing about.

TWO CASES OF VULVO-VAGINITIS COMPLICATED BY  
ARTHRITIS IN YOUNG GIRLS.

Dr. Henry Koplik related the cases and reviewed recent literature bearing upon the subject. The first case was in a child aged five years, who had been suffering two weeks from muco-purulent discharge from the vulva. It was found to contain gonococci. The patient complained of some uneasiness in the præcordial region, pain in the right shoulder and wrist, and three days before it had complained of pain in the right knee. On coming under observation the child was found illy nourished, anæmic, the right shoulder very painful, no swelling nor rise of temperature. The right wrist was also painful. The right knee was painful and swollen; the touch indicated a rise of temperature; there was an effusion into the joint; the patient walked with the greatest difficulty. There was a thick, greenish-yellow, vulvo-vaginal discharge. Temperature 102° F. per rectum. The heart was negative. The swelling of the knee somewhat subsided under treatment and rest, the discharge continued, and the patient passed from under observation.

The second case was in a child three years and a half old. Her guardian noticed a discharge from the vulva, loss of appetite, redness, swelling, and pain in the right ankle. There was no history of traumatism. Examination showed a muco-purulent discharge upon the vulva, the right ankle swollen

and red, some rise in the temperature at the joint, no signs of fluid, manipulation very painful. Under treatment the redness and pain in the joint decreased, but the discharge from the vulva remained, and later the acute affection of the joint passed off. There was some relaxation of the ligaments of the ankle-joints, but not sufficient to interfere much with function, although a reinforcing shoe was worn. The joint so far improved that one would not have believed it had been affected, but through some neglect the child got a blennorrhœa, and was sent to an eye infirmary, where he lost sight of the case. Gonococci were found in the mucus and pus on the vulva.

The author avoided as much as possible the use of the term gonorrhœal rheumatism. He believed the arthritis might complicate other severe suppuration; and cited the case of an infant at the breast. Unlike in adults, the minor joint-affections in children passed off within a reasonable time. The cases were not to be explained by the circulation of the gonococcus in the blood.

#### SPECIMENS ILLUSTRATING PULMONARY TUBERCULOSIS IN INFANTS.

Dr. C. G. Kerley reported twenty cases of pulmonary tuberculosis in infants, with autopsies, which occurred in an institution. In the course of recital of the cases he said the books either mentioned the infrequency of cavities in the lungs of infants, or did not mention the subject at all. But in twelve of these cases they found cavities, varying in size from a hazelnut to a walnut. In five there were cheesy nodules, some beginning to break down. The situation of the cavities was as follows: In the apex in one; lower portion of the upper lobe in three; the right middle lobe in one; the lower lobes, seven; the left lobe contained cavities in seven cases; the right, in five. Specimens were presented.

#### CHRONIC LARYNGEAL STENOSIS OF AN OEDEMATOUS NATURE.

Dr. Rook presented a boy who had been hoarse, and had difficulty on inspiration for eight months from swelling of the left aryteno-epiglottis caused by the swallowing of hot potato. He presented the case because of its rarity. The swelling was reduced and the symptoms largely relieved by the use of iodide of potassium.

A member expressed the opinion that there must have been a lesion of the mucous membrane in order to keep up such a

condition so long a time, and Dr. Agremonté spoke of the value of a solution of nitrate of silver.

#### THE PROPHYLAXIS OF DIPHTHERIA.

Discussion on this subject was opened by Dr. William P. Northrup, and was divided into two heads: first, what precaution shall the physician take against the spread of the disease by himself; second, what are the best means of protecting the nurse and others who are constantly exposed?

To prevent the spread of the disease by himself, the physician must protect and disinfect. He must wash his hands thoroughly with soap, and disinfect them with carbolic acid or bichloride of mercury or other agent known to be fatal to germs. He must keep his beard and hair clean. There was no reason for his coat being infected,—it should be removed before making an examination. But suppose the vest had received a discharge from the child's throat? The manner in which the author disinfected this and also the clothes and playthings of the patient consisted in placing them in a vessel through which steam of  $212^{\circ}$  F. was made to pass. None entered below this temperature, at which it did not seem to wet clothes at all, but left them perfectly dry within a minute or two after they were removed from the vessel. He demonstrated its action. Having recently published his views on the general subject, Dr. Northrup gave place to other speakers.

Dr. William H. Thomson said the question seemed to imply that there was enough danger of carrying diphtheria about from house to house on the part of the physician to render it imperative that he use means of personal disinfection. He found himself at considerable disadvantage in discussing the question, because he was not at all sure of any such case ever having occurred. Certainly in his own experience he could not trace a case of the disease which owed its origin to contagion transported by himself. And it was not that he would not have had opportunity of knowing it had it happened. This statement applied not only to diphtheria, but also to scarlet fever. With regard to diphtheria, no physician had ever admitted to him having transported the contagion to others, and he had asked a good many. It was very different with small-pox. Two physicians had admitted to him having conveyed this disease.

Regarding the protection of the nurse and others in the house, he related his experience in a family with eight children. Two of the children were taken down with scarlet



fever, and he had them removed to a back room of the second floor; three days later he was called in and found two of the other children with sore throat, which he expected would prove to be scarlet fever, although having no such appearance at that time. It developed into typical diphtheria, without any signs of scarlet fever. Those children did not interchange diseases, although on the same floor. The elder daughter attended the diphtheritic cases, and the mother the scarlet fever cases. The other children escaped both diseases.

In this instance, and always, he used as a disinfectant bromine, keeping the air of all the rooms charged with it to such a degree that one would not deny the justice of its name,—meaning stench. And he never left the house without dipping his hands into the solution,—a drachm of Smith's solution in two ounces of water,—which was left about the room in saucers. He believed this had sufficient disinfecting properties to protect the nurse, physician, and members of the family. He had found but one exception, that of a family of nine children, all destroyed by scarlet fever, a part of which he saw with Dr. Ranney. In that family, however, the power of the infection was greater than he had ever known before. One of the children died within twenty-two hours of the first symptom.

It was not to be supposed that every germ of the poison in the room was killed by bromine or other disinfectant, but the present state of our knowledge seemed to point to the fact that if only a part of the germs were killed the room became practically disinfected. The serum of the blood was shown to be an excellent disinfectant,—that is, it was germicidal up to a certain point, when this property was overcome. We knew that in culture specimens we could lessen largely the power of bacteria to propagate themselves.

While he did not believe there was much danger of the physician carrying diphtheria to other patients, yet he should exercise precaution, and in disinfecting the hands would find bromine less disagreeable and injurious than carbolic acid, and effective enough. Next to it, his preference would be for Labarraque's solution, one part to four of water.

Dr. August Caillé said that some years ago, in studying this subject, he had come to the conclusion that diphtheria was preventable. In examining a patient he never sat in front of him, but at one side. In this way he avoided ever having his clothes soiled. After getting through with the examination he asked for sapolio, washed his hands in it, and disinfected them in Labarraque's solution, which he carried with him. If he performed intubation or tracheotomy, he took off his

coat, rolled up his sleeves, and pinned on a large apron. There was no need of sitting down and dallying with the patient. On leaving the house he walked five or ten blocks before entering the carriage, and in that way ventilated his clothes. He had never carried diphtheria into a house.

In answering the second question, he said the nurse should have a long garment with a hood attached; the sleeve should be long, secured by an elastic band around the wrist. She should be provided with Labarraque's solution, and in the families of the poor he gave instruction to get Javelle Water, which was cheap and effective. But he relied largely on disinfection of the naso-pharynx. In 1888 he reported to the Academy some instructions in this regard which he considers of importance, and they had been adopted by the Board of Health. The nurse and others should guard against taking the disease by thorough cleansing of the teeth, gargling the throat, and cleansing the nose with a disinfectant solution.

Dr. I. H. Hance said that when he first entered the Nursery and Child's Hospital there was an epidemic of diphtheria, during which ninety children were affected. They afterwards adopted, as a prophylactic, the use of an antiseptic spray and mouth-wash twice a day, in cases of both children and nurses, giving especial attention to the teeth, if they had made their appearance, and since that date, during a period of three years, there had not been, at any time, more than five or six cases in a household of from one hundred and seventy-five to two hundred and twenty-five children. There had been no epidemic. He knew of no instance in which he had carried the disease.

Dr. F. H. Dillingham was asked with regard to the rules of the Board of Health bearing on this subject. He said he regarded diphtheria as one of the mildest contagious diseases, although now and then it showed itself markedly contagious. He thought there was very little danger of physicians carrying it if they used ordinary precautions. Of course, it was not necessary for him to handle the patient much; if there was a good light, with a spoon as a tongue-depressor, he could quickly make the examination. The child was easily made controllable by placing a sheet around it so that it could not struggle. He usually carried bichloride of mercury in tablets, which he dissolved in water, and disinfected himself. Then a walk in the fresh air would do as much in the way of disinfection as anything. Regarding the nurse, when she had been in attendance a long time the clothing should be changed. She should take a bath, wash the hair thoroughly, and also use a nasal spray and gargle. One source of the spread of diphtheria

was mild cases in persons who continued on the street or in stores at their business. He mentioned such a case in a drug clerk.

Dr. Thomson asked whether any of the physicians present had ever carried diphtheria to others.

Dr. Agremonté said he had once contracted diphtheria himself from a hospital patient, and from him his mother also took it, but he admitted this had little bearing on Dr. Thomson's question. He used chlorine instead of bromine as a disinfectant. He washed the nose posteriorly instead of anteriorly, since the latter method might cause infection of the Eustachian tubes.

Dr. J. Lewis Smith said there were cases on record in French medical literature in which diphtheria had been carried by the physician or nurse. He had known cases himself in which he believed that to have been their origin.

Dr. Koplik said dry heat at a higher degree than that employed by Dr. Northrup had failed to kill bacteria even when continued an hour or longer, and he thought Dr. Northrup's method was likely to leave some of the germs, and for that reason lead to mischief.

Dr. Northrup replied that there was a decided difference between employing dry heat and steam at  $212^{\circ}$  F. It had been shown that the latter killed the spores of bacillus anthrax in five minutes, while it required dry air, at  $280^{\circ}$  F., four hours to do the same. The steam penetrated all the folds of the material to be disinfected quickly.

The chairman believed thoroughly in the apparatus presented by Dr. Northrup. He had made use of it himself with a great deal of satisfaction.

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## COINCIDENT GEOGRAPHICAL DISTRIBUTION OF TUBERCULOSIS AND DAIRY CATTLE.\*

### RÉSUMÉ OF DR. E. F. BRUSH'S PAPER.

THE doctor began by stating that if he could show by reputable authority that the geographical distribution of human tuberculosis was coincident with that of bovines affected with this disease, the inference would be that they stood to each other in the relation of cause and effect. In studying the geographical distribution of pulmonary consumption, the ne-

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\* Read at Albany at the meeting of the New York State Medical Society, February 5, 1890.



cessity for separating imported from indigenous cases was absolute in order to reach any conclusions as to the habits of the people and their effect with reference to the disease. Many other diseases are conveyed to the human race by animals where no doubt exists, but in the case of tuberculosis the slow development of the disease is the disturbing factor. The danger of animals being infected by man is exceedingly small; the danger of man being infected by animals is the only danger practically, and this can be avoided. He thinks that the proposition for isolating human consumptives is leading us away from the chief danger, as he shows that in lands like Egypt the indigenous inhabitants retain immunity while associating for long periods with consumptive immigrants, while, on the other hand, in regions like Australia and the Sandwich Islands the inhabitants have become infected after the introduction of dairy cattle. The best dairy cattle breeds, he argued, are the tubercular breeds, while some of the breeds, not classified by the breeder as dairy cattle, are exempt from tuberculosis owing to their vigor and health. In all dairy countries the prevalence of tubercular consumption is a settled fact, while the only countries at all in doubt are those where the dairy consists of other than our domestic cows. Referring to China, he spoke of the poor Chinese as a people who did not use milk, while the Tartars in that country were milk and meat consumers, and therefore the observations of medical men are very confusing, and they confess that they cannot understand why the disease prevails among the dominant Tartar class and not among the poor Chinese, who, according to all preconceived notions, ought to be tubercular. In South America, where cattle are exceedingly numerous but the use of milk almost unknown or used only after being boiled, the natives still enjoy an immunity. The doctor then, taking a geographical square of ten degrees, embracing Spain and Morocco, contrasted the two countries, as the climatic and other conditions must be pretty nearly equal, but Morocco, where there are no European dairy cows, is exempt from tuberculosis, while in Spain and Portugal, where dairying is carried on in the European style, tuberculosis prevails. The doctor ended by saying as a physician and as a cattle-breeder that there was no great necessity for a disturbing alarm, because the benefits conferred on us by the bovine race far outweighed the burden of disease. If there was no way of remedying the disease he would be decidedly in favor of letting affairs remain as they are. He expressed, however, a strong opinion that dairy and beef cattle could be bred in such a way as to eliminate tuberculosis, but that this could only be done by increasing the price of both beef and milk.

# RÉSUMÉ OF DR. WAXHAM'S PAPER ON THE SURGICAL TREATMENT OF CROUP, PRE- SENTED TO THE SECTION ON LARYNGOL- OGY, NASHVILLE, MAY 21, 1890.

To those competent to do the operation with delicacy and skill he recommended intubation in preference to tracheotomy at all ages, under all conditions, and under all circumstances. In support of this advice he fully recorded two hundred and eighty-five cases with one hundred recoveries, or thirty-five per cent. These cases were not selected, the majority of them being among the poor and destitute, where tracheotomy would hardly have been considered. The ages ranged from five months to twenty years, and the operations were not performed early, but as a last resort. The ages were as follows:

Under	1 year	10 cases, with 3 recoveries, or 30.00 per cent.							
Between	1 and 2 years	37	"	"	9	"	"	24.32	"
"	2 " 3	46	"	"	10	"	"	21.76	"
"	3 " 4	47	"	"	17	"	"	36.17	"
"	4 " 5	59	"	"	23	"	"	38.98	"
"	5 " 6	27	"	"	14	"	"	51.85	"
"	6 " 7	18	"	"	7	"	"	38.88	"
"	7 " 8	20	"	"	9	"	"	45.00	"
"	8 " 9	7	"	"	4	"	"	57.14	"
"	9 " 10	6	"	"	3	"	"	50.00	"
"	10 " 11	3	"	"	1	"	"	33.00	"
At	12	2	"	"	0	"	"	00.00	"
"	13	1	"	"	0	"	"	00.00	"
"	14	1	"	"	0	"	"	00.00	"
"	20	1	"	"	0	"	"	00.00	"
		285			100			35.08	

Among those to recover were two infants of nine months and one of ten months. There were ninety-three cases under three years, with twenty-two recoveries, or 23.76 per cent. There were one hundred and ninety-two cases over the age of three years, with eighty-eight recoveries, or 45.62 per cent.

## Foreign Correspondence.

### LETTER FROM PARIS.

(Special Correspondence to the ARCHIVES).

Treatment of Infantile Epilepsy by Cautery-Points on the Head—Treatment of Insomnia in Children—Albuminuria after Small-Pox—Anæmia of Suckling Infants—Age to Operate on Hare-Lip—Treatment of Jaundice of Newly-Born Infants.

*On the treatment of infantile epilepsy by cautery-points on the head.*—Dr. Descroizilles has used this method in several cases with success, and has continued it for some time, so that we call attention to it again; as it presents certain advantages that cannot be got from medicinal treatment of such cases. The little patients treated here vary from four years of age to eight or nine, and in their cases it had been observed that they presented the usual symptoms of epilepsy as seen in children, such as loss of consciousness, convulsions, etc. The cauterizations were done with the ordinary thermo-cautery. At first the application was very light, and some thirty-five points were made, or rather a pointed cautery was made use of in the following manner: The head having been carefully shaved, a series of antero-posterior lines were made with the cautery on each side of the median line, and some ten to twelve different applications of this kind were needed to produce an effect. The number, in all, of points made were three hundred and twenty to three hundred and fifty, at the most. Some cases only required one hundred to one hundred and fifty. The pain was not important and the little patients did not resist the treatment, while no local irritation or suppuration was seen. Considerable amelioration was noticed to follow this attempt at treating these cases, and while no cures can be claimed as yet, it is hoped by a certain persistence with the method that good results will be obtained.

*Treatment of insomnia in children.*—M. J. Simon gives some good directions in regard to this vexed question in a late clinic, from which we take some extracts. Dr. Simon says, "You will often have children brought to you, or else you will be asked to see them at home, who are agitated and cry, in the little sleep they get, and the parents will ask you to make them slumber quietly and profoundly. First of all, you must



try and discover the cause of all this, and I admit that is very difficult to do, but as the insomnia is often of a dyspeptic origin, look to that first, see if drugs, coffee or tea, or some form of alcohol, is given to the child, or if its milk or food is correct in kind and quantity. If the child is still at the breast, see that it is not fed too often; examine the milk of the nurse. If the child is three or four years of age, see that too much food is not given at night. These children should not eat much at night. Once you know the etiology, your first care will be to combat the cause by strict hygienic measures; but as you will often not be able to discover the reason why the child does not sleep, you will have to resort to hypnotics, and you will inquire, What are the best hypnotics for a child? The first of all of them is still opium, 'because it possesses sleeping properties,' as Molière said, but you must not give opium to a child that is constipated or who has enuria, or who has an itching skin. These are the principal contraindications. You may give laudanum in half-drop doses in children under one year, and add one drop to this dose per year of age, or you can use paregoric if you will remember that this elixir contains five drops of liquid to one drop of laudanum, so that two or three drops of it can be given at one year, and so on increase as before. The syrup of codeine is well supported by children; give a teaspoonful at one year, and half as much to infants under that age. The bromides are useful; give thirty centigrammes at six months, fifty at a year, and one gramme afterwards *per day*, but do not use it constantly; interrupt it for five or six days from time to time. Chloral is also good, and the best way to use it for a child is to give it per rectal injection, first giving enema to clean out the intestines, and follow with the chloral, which may be associated with camphor or musk, and prepared by rubbing it up in the yolk of an egg. The dose is the same as for bromides. Chloral is very useful when there is a tendency to convulsions, which are shown by insomnia, hiccough, and starting in sleep. Antipyrin can also be given in enema in the same doses as for the bromides, and you must also not forget the lesser hypnotics, such as musk, ether, valerian, and the cherry-laurel, which give excellent results in these cases."

*Albuminuria after small-pox.*—The well-known albuminuria post scarlatina is frequently spoken of, but the albuminuria post small-pox, if we can coin this expression, is not so well known. Professor Peter calls attention to it in a late lecture, and he states that there is, of course, a renal hyperæmia during variola which may be, and often is, but temporary, but sometimes it persists and albuminuria follows. First of all, there

is a nephritis, and this inflammation may go through its evolution without attracting the attention of the attending physician, and a month or a year, or even two years, afterwards the patient will complain of pain over the lumbar region and headache, and then only the urine is examined, and albumen is found. Then, if the history is carefully examined it will be found that the patient had first of all small-pox, then renal troubles, and albuminuria followed. What is the prognosis of this condition? Serious, without a doubt, and its gravity results mostly from the bad condition under which most of such patients live, from the menace of taking cold, to which they are subject, and also from the date of first attack or the time when the doctor is called upon to treat the case. The treatment should be milk mostly, with an alkaline iodide afterwards, given according to the tolerance of the patient, alternated with the use of tannin, and also, according to Dr. Peter, with thermo-cautery points over the region of the kidneys, which the professor prefers to see kept active by causing a suppuration for several months in severe cases. When this therapeutic intervention is strictly carried out the prognosis is more favorable, if the patient can be prevented from taking cold, and here, of course, a change of climate to a dry warm place is indicated. The great point to retain here is the fact that such cases exist, and for physicians treating small-pox to be on the watch to prevent *albuminuria post variola*.

*The anæmia of suckling infants.*—Professor Hayem, who holds the chair of therapeutics at the faculty of medicine in Paris, does not relish his professorship, and continues his physiological studies, by which he has gained so great a reputation; he has in late years published a number of works on the blood and its physiology. A late article of his speaks of the above subject; he finds that at the moment of birth an infant's blood is just as rich in red globules as an adult's is, but in several days afterwards they diminish, and during its nursing days the number is maintained at a lower average than that of adult's blood. However, there is no real, essential or protopathic anæmia seen in newly-born children, and the causes that are the most powerful in causing anæmia at this time of life are, first, infantile syphilis, and next, digestive troubles, particularly green diarrhœa.

The lesions found in the globules are, in a general way, the same as those of the adult, but the inequalities seen in the diameter of the elements are more notable than in the ordinary cases of anæmic blood. This seems to be owing to the relative richness of the blood of the newly-born in very large globules. As soon as the anæmia is constant and becomes important,

these large elements multiply, and the giant globules, that are seen in very pronounced anæmia of the adult, are seen at this time in infant's blood. At the same time, and this is important in the examination of such blood, there are seen a large number of red globules that contain a nucleus. This is only seen in adults' blood when there is leucocythæmia or very profound anæmia. If we put aside cases of leucocythæmia, we can say that adults' blood, even in serious anæmia, rarely contains red globules with a nucleus. This is not the same with nursing infants when anæmia exists, as red globules are then seen in quantities and with a nucleus. In an anatomical point of view, the globules of such children do not differ from those of adults otherwise. The characteristics of anæmia in newly-born infants present a real interest as regards the physiology of the blood. In the human race the red globules with a nucleus disappear towards the sixth month of intra-uterine life, while they are found in mammifera for several weeks after birth. At the moment when extrauterine life commences the formation of the blood by the red cells with a nucleus has already ceased for some three months in man, but continues for a short time afterwards in certain animals. The interesting point is, however, that the organs that form the elements in man are less dormant in the child than in the adult, and they pass again into activity much easier in the first than in the last. The bony marrow in the child remains also red, and it is rich in hæmoglobic cells, while later in life it becomes fatty and contains a much less number of nucleated globules. In the adult the appearance of red globules with a nucleus is a fact that should cause the utmost apprehension, as it shows a last effort on the part of the globules to reconstruct the blood, but in infants it is not of the same gravity at all, owing to the recent activity of the blood-cells and the fact that they have lately been in the same condition.

*At what age must we operate hare-lip?*—This is an interesting question that was treated of in a recent thesis before the faculty, and certainly, when the surgeon is before parents who insist on the baby having his deformed lip attended to at once, although he may not be more than a few weeks old, and may only have a narrow fissure on one lip, it becomes important to know just when the operation should be done; much of course depends on the vigor of the child and if the hare-lip is double or complicated. Here it would be prudent to put off the operation until the end of the first year, if not to eighteen months or two years, but it is never safe to wait until the end of the second year; and if we leave it until the



third, fourth, or fifth year, we fall into the bad periods when the development of the teeth must be taken into question and the nose cartilages have become hard and flat. Besides all this, there are particular indications, such as the existence of coryza, enteritis, or the child may be near others that have scarlatina, or it may be in summer time with infantile diarrhoea. So that, to sum up the matter, we can say that the author, M. Forque, only indicates that we must seize a favorable chance at as early an age as possible, and that, in fact, in this matter it is the same as in many other questions that a doctor has to decide, and in which an ounce of common sense goes further than all the science in the world.

*Treatment of jaundice in newly-born children.*—The jaundice seen in babies should be divided into a slight form and a serious form. The first goes away rapidly, while the second is nearly always mortal. This last may be owing to a malformation of the bile-vessels, but it is most often due to a phlebitis of an infectious nature, and the inflammation of the liver is consecutive to a poisoning of the umbilical wound by septic germs. Whenever the mother has any secondary symptoms after child-birth (puerperal fever, erysipelas, etc.), and the umbilicus of the child has not healed up quickly, it should be kept away from her, and antiseptic applications should be made to the umbilicus, either simply, with a dressing of vaseline, twenty grammes, to boric acid, four grammes, or only a cloth wet with a (4 to 100) solution of boric acid water. At the same time the following alkaline pomade should be rubbed in over the liver: Soda carbonas, five grammes, to lard, twenty grammes. Constipation, in the child, should be prevented by some simple means, such as light purgatives or an enema. We close our correspondence this month with an *electuary for infants*:

R Mannæ, 50 grammes;  
 Magnes. calcin., 10 grammes;  
 Sulphur. sublim. (washed), 10 grammes;  
 Mellis (white), 30 grammes. M.

Sig.—One or two tablespoonfuls in a cup of hot milk.—DR. FERRAND.

## Current Literature.

### I.—HYGIENE AND THERAPEUTICS.

**Maréchaux:** A Case of Acute Poisoning with Antifebrin. (*Rev. Mens. des Mal. de l'Enf.*, December, 1889.)

For a child five months of age who had been suffering several days with intestinal catarrh the following prescription was written:

	Grammes.
R Calomel,	.01;
Sac. alb.,	
Cret. prep., āā,	.30.

Sig.—Div. in chart. No. iii. Take half a powder every three hours.

By mistake the apothecary delivered the following:

	Grammes.
R Antifebrin,	.50;
Calomel,	.05;
Sac. alb.,	.50.

Half the above was administered to the child; that is, twenty-five centigrammes of antifebrin. Within three hours the entire surface of the body assumed a bluish color, and consciousness was lost. Four hours later the author observed the following phenomena: cyanosis of the entire surface of the body, blueness of the lips, coldness of the nose, ears, hands, and feet. The eyes were half-opened, the eyeballs turned upward, the pupils moderately and equally dilated, and not responding to light. The respiration was superficial and seventy-two per minute. The pulse was small and one hundred and sixty per minute. The skin was cold and covered with a cold, viscid sweat. A teaspoonful of Hungarian wine was given hourly, and the child was wrapped in a moist cloth over which was a woollen covering. Soon there was profuse perspiration, the skin became warm and the pulse stronger. The eyes were closed and responded feebly to light, the respiration was still rapid, and the temperature 37.2° C. In a few hours there was a large, greenish, fetid, liquid stool. Then a calm sleep followed, interrupted by several stools, the infant gradually resuming its normal condition.

A. F. C.

**Hensinger:** The Treatment of Scarlatinal Diphtheria by Means of Injections of Carbolic Acid into the Tonsils. (*Rev. Mens. des Mal. de l'Enf.*, December, 1889.)

In the course of an epidemic of scarlatinal diphtheria which lasted almost an entire year, and on account of the unsatisfactory results which follow most methods of treatment, the author determined to try the method of Heubner, which consists in injecting carbolic acid into the tonsils. Twenty-four patients were subjected to this treatment, ranging in age from one to twenty-four years. A three-per-cent. solution was used. When the false membranes appeared in the pharynx and a moderate degree of swelling was observed in the neighboring lymphatic glands, the injections were made each day into each tonsil, half a Pravaz syringeful being injected in patients under five years of age and an entire syringeful for older ones. Usually after the third injection the fever diminished, and after the fourth or fifth the local swelling subsided and the symptoms in general improved. In only one case, which was one of very malignant angina, were fourteen injections required before perceptible improvement ensued. In some cases it was found necessary to repeat the injections twice daily. It was usually found an easy matter to make the injections even with rebellious children. In the interval between the injections the pharynx was irrigated every hour with a four-per-cent. solution of boric acid. The neck was wrapped in moist compresses according to Piressnitz's method. The diet was also as liberal as could be enforced.

A. F. C.

Wolff: The Inheritance of Infectious Diseases. (*Jahrb. f. Kinderh.*, xxx. 1 and 2.)

Clinical observation can furnish, only in very rare cases, when all collateral circumstances have been excluded, the proof of the inheritance of infectious disease. Experimental proof can be obtained by careful attention to details. Wolff's experiments were first made in connection with splenic fever. The experiments of Branell, Davaine, and Bollinger agreed in the conclusion that the bacillus of this disease (bacillus anthracis) does not traverse the placental circulation. Their opinions were opposed by those of Strauss and Chamberland after culture experiments with foetal blood and by Kubassow after microscopical investigations upon foetal tissues. Wolff experimented upon this subject many times, and used the utmost caution to prevent interference with the correctness of his experiments. In none of the twenty-nine foetuses which he examined, and in none of the foetal chorion cells, were the bacilli of splenic fever found. He also made one hundred and fifty-six cultures of macerated foetal tissue. In six of these cultures he found a development of the bacilli of splenic fever, and with these he inoculated thirteen young guinea-pigs and



sixteen white mice, with the result that two guinea-pigs and one mouse died from infection. From these experiments he concluded that only in very rare instances can infection from the bacilli of this disease be inherited, and also that there must have been some flaw in the experiments which were performed by Strauss and Chamberland and by Kubassow. He also concludes that, as a rule, the foetus is unaffected by the presence of splenic fever in the mother. He also thought it probable that infection could be transmitted from mother to foetus only at certain periods of pregnancy, though he could offer no experimental proofs of that statement. He also thought it probable that differences in the anatomical structure of the placenta in different species of animals might account for the differences as to susceptibility to infection on the part of the foetuses. The statement of Kubassow that there is direct communication between the vessels of the mother and of the foetus in the placenta is denied by anatomists in general. Wolff is convinced that the healthy epithelium furnishes an absolute barrier to the passage of bacilli, and that inorganic particles are thus obstructed has been shown by the experiments of Hoffmann and Langerhaus, Fehling, Ahlfeld, and Lieberkühn. One must conclude, therefore, that pathological conditions exist in the placenta if the bacilli of splenic fever pass through it to the foetus, and these may consist in the form of hemorrhages in the maternal portion of the placenta on account of bacillar thrombi, or in necrosis of epithelium, injury of cell-vessels, or destruction of cells in the foetal portion.

In the experiments concerning vaccinia thirteen pregnant women were vaccinated at the tenth month, five at the ninth month, and seven at the eighth month. In eleven of the women there was a successful vaccination, in six it was partially so, and in three there was a failure. The seventeen children of the mothers who were successfully vaccinated were vaccinated between the first and fifth days of life, and in all of them the vaccination was efficient. A second series of experiments, in which a secondary vaccination was performed six days after the first, showed that imperfect results would attend such re-vaccination. The author concluded that successful vaccination of pregnant mothers did not influence their foetuses. He admitted, however, that complications in connection with vaccinated pregnant women are conceivable, such as changes in the placenta on account of syphilis, pyæmic or septic conditions resulting from vaccination, and that in such cases vaccinal infection might pass from mother to foetus.

In regard to variola, some cases are recorded in which the pregnant mother has transmitted it to her foetus. These are

especially liable to occur in connection with hemorrhagic variola, the germs being transmitted with the effusion of blood. One must also consider the possibility of the development of true variola pustules in the maternal uterus and other genital organs whereby infection might occur from contiguity.

A. F. C.

**Babes:** Bacteriological Investigations concerning the Septic Processes of Childhood. (*Jahrb. f. Kinderh.*, xxx. 1 and 2.)

The author's paper constitutes the results of careful bacteriological investigation upon the various organs of one hundred and twelve children who died in the Buda-Pesth Children's Hospital. In most of the cases there were septic processes which complicated the course of scarlet fever or diphtheria. In almost all the cases which died with septic symptoms there were bacteria in the internal organs, usually streptococci with other saprogenic micro-organisms, but in a certain series of the cases there were varieties of bacteria hitherto unrecognized, which produced in inoculated animals the classical features of septicæmia, and appeared to be the peculiar septic bacteria of which Koch has spoken. These organisms were found in connection with gangrene of the skin, putrid bronchiectasia following scarlet fever, in dysentery, etc. Of particular interest to pediatricists is the experience of the author in connection with the relations of the streptococcus to scarlet fever. Löffler, Crooke, Fränkel, Heubner, and others have heretofore found chains of the cocci in the dead bodies of those who have died from scarlet fever, and their results have been verified by the author's investigations, especially in experiments upon the kidneys of fourteen children who died with the phenomena of scarlatinal nephritis. In addition to the streptococcus, saprogenic bacilli were found in some cases, and in others the lancetococcus of Fränkel. Microscopical examinations were made in only four of the fourteen cases. In these was found granulation-tissue in the neighborhood of many of the larger vessels, an abundance of nuclei in the glomeruli, with swelling of the endothelial cells and desquamation of the capsular epithelium. The streptococci were also found in other organs, for example, in the tonsils, and in two cases in the deeper portion of the skin. The chains of cocci isolated from chronic cases of scarlatinal nephritis produced only moderate irritation upon animals which were inoculated with them, while mice and guinea-pigs which were inoculated with matter taken from malignant cases of the disease quickly died. Cultivated in an artificial

medium, these organisms lost their virulence in a longer or shorter time, and then conducted themselves morphologically and biologically like weakly pathogenic chaincocci. This variability in the virulence of the streptococci in connection with their almost constant occurrence in those who suffered with scarlet fever led to the assumption that by natural cultivation upon a favorable soil their virulence could be so far overcome as to result in an alteration of the typical features of scarlet fever. The specifically virulent streptococcus of this disease is to be found in the pharyngeal mucous membrane, where it causes tonsillitis; it is also demonstrable in the lymph-glands of the retro-pharyngeal tissue, the neck, and the mediastinum, and occasionally, as already stated, in the skin.

A. F. C.

Bäumler: The Prophylaxis of Scarlet Fever. (*Jahrb. f. Kinderh.*, xxx. 1 and 2.)

The urgent necessity for an effective prophylaxis of scarlet fever is manifested by the universal experience as to the danger from the disease to life and health. It is also certain that the disposition to the disease is most decided within the period of the few years of early childhood, and that the longer a child remains exempt from it the less likely he is to have it. The bearers of the contagium of scarlet fever are the respired air of the patient, the excretion of the pharynx, epidermal scales, and the evacuative matter of the bladder and intestine. Since the time in which desquamation is fully accomplished must vary in different individuals, the isolation of patients should continue for a varying period of time. It should not terminate until desquamation from the hands and feet is entirely accomplished. This period may amount to forty days or even much longer, and during that time patients must not come in contact with other members of the family, must not go to school, must not play with other children, and must not visit watering-places or other public resorts. Convalescents in public conveyances often transmit infectious diseases. The danger of infection from such patients is diminished if they receive frequent warm baths, inunctions of fatty substances, and especially careful applications of the latter to the hair and scalp. Convalescents who have been in hospitals should first be isolated in their homes before they are brought into contact with other members of their families. Those who have acted as nurses to scarlatinal patients should not come in contact with the well or with other diseased individuals, or, if this is impossible, they should be especially particular in regard to the septic condition of their hands and clothing. The hands should be washed in a solution of car-



bolic acid, the clothes should be changed, and they should ventilate themselves freely in the open air. The sick-rooms should receive an abundance of pure air, the clothes of the patient should be washed in a three-per-cent. solution of carbolic acid and then boiled in suds of potash soap, or disinfected with steam, and shoes should be washed inside and out with carbolic solution. The sick-room and its utensils and furniture should be thoroughly disinfected, and exposed to a free draught of air for several days. In the transportation of scarlatinal patients all wagons or carriages should receive careful disinfection after transportation has been effected.

A. F. C.

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## II.—MEDICINE.

Money, Angel: Nodular Periostitis in Rheumatism and Heart-Disease of Children. (*Lancet*, August 10, 1889.)

It is not generally known that nodules are rheumatic manifestations in other than subcutaneous tissues. Nodular pericarditis, nodular pleurisy, and nodular periostitis are undoubted facts. The author has notes of a few cases in which subcutaneous nodules were associated with nodules growing from bone,—exostoses,—resembling subcutaneous nodules in every respect except that they are firmly fixed to the bone. In one case it was proved post mortem that the olecranon had nodular exostoses growing therefrom. There were also many nodules in the valves of the heart, chiefly the mitral. Rheumatism is a frequent producer of fibrous nodules, limited localized lumps of connective tissue.

Smith, F. J.: Hypertrophic Cirrhosis of the Liver in a Child. (*British Medical Journal*, November 9, 1889.)

The patient was a girl aged four and a half years, with no hereditary taint of any kind. There was icterus neonatorum, which disappeared, and at the end of the first year slight evidence of rickets. At the age of three and a half years she had bronchitis with jaundice, without ascites. Both conditions disappeared, but the liver remained slightly enlarged. When four years old a second attack of bronchitis and jaundice appeared, from which the child never rallied; diarrhoea supervened, and terminated in death at the end of six months.

Upon autopsy the liver was found enlarged, nodular, and slightly tough. Under the microscope it showed an enormous development of meso-connective tissue, both between and penetrating the tubules. The spleen was about twice its normal size.

**Menzies:** Scarlet Fever complicated by Measles. (*British Medical Journal*, November 9, 1889.)

The patient, aged ten years, was suffering from scarlet fever which had reached the stage of desquamation. On the twelfth day a typical eruption of measles appeared, accompanied by catarrhal symptoms. The patient at once sank into a typhoid condition, and died thirty-six hours after the appearance of the second rash.

**Parrott:** Mumps, Orchitis, and Meningitis. (*British Medical Journal*, October 12, 1889.)

The patient, a man, aged twenty-seven, had swelling of both parotids on May 18. Two days later the swelling of the parotids had disappeared, but the left testicle was swollen and tender; pulse and temperature normal. On May 22 the testicle was smaller and less tender, but severe headache and photophobia developed with slight delirium; the temperature run up to  $104.2^{\circ}$  and the pulse to 128. Four days later the temperature was  $97.8^{\circ}$  and the pulse 68. The patient made a good recovery.

**Marsh, Howard:** Tuberculosis in Some of its Surgical Aspects. (*British Medical Journal*, July 13, 20, and August 3, 1889.)

Among the influences productive of a fitting soil in which the bacillus may be developed, inherited tendency is of much importance, but its effect is often much exaggerated. The influence of age deserves attention, for a large majority of all cases of tuberculous disease of spine, joints, and lymphatic glands begin between the third and eighth years. The active period of these affections seems to be limited in duration, in other words, is *transitory*. A third important influence is inflammation, and a fourth is impaired general health. Thus we find that the bacillus tuberculosis is dependent on its vitality and maintenance, upon conditions which are either transitory or such as can be counteracted or removed. When these conditions are no longer present the bacillus perishes and the tuberculous process comes to an end. When this point is reached, tubercle, together with the products to which it has given rise, becomes a mere *corpus mortuum*, and is either gradually removed by disintegration and absorption, or gives rise to an abscess, with the evacuation of which it is swept clean away. Cases are cited in support of this view, and seem to show that suppuration may be maintained until the necrotic material left in the tissues on the cessation of the tubercular

process has all been carried away, and that when evacuation is complete the tissues will heal soundly.

Relapses occur, first, when the patient has been allowed to get about before there has been time for (a) the arrest of the tuberculous process, (b) the removal of its products, or (c) the return of the affected tissue to a second condition. This period generally extends to a year or more. When the deposit is extensive, two years will be required, and when suffused or profuse, three or four.

Second. Not, properly speaking, relapses, but cases in which the tuberculous tissue has not been completely removed.

It is well established that general tuberculosis may be produced through the diffusion, from a local source, of tuberculous material. Although the possibility of general infection from a tubercular joint is a distinct element of danger, the risk is so small that it cannot afford substantive support to the practice of early incision. There is no guarantee that all the tubercle in the vicinity of the joint has been removed, or that the lymphatics are not involved, while the operation may precipitate the very result it is intended to prevent.

When we turn to the active results that have been obtained by early excision, we are met by a serious difficulty. This consists in the small amount of evidence that has yet been produced. So far as it goes it is not convincing. Perfect closure of the wound is not alone evidence of success.

As to the results of treatment without operation, seventy-six cases of hip-disease are reported in which the result was known at least one year after discharge from the hospital. Of these, thirty-seven were suppurative cases, of which only four still had sinuses. One was a perfect recovery, six were excellent, seventeen were good,—about sixty-five per cent.; thirteen were moderate,—thirty-five per cent.

From careful study of these cases the following conclusions may be drawn in regard to hip-disease when it is treated by continued rest, and without operative interference, except the opening of abscesses as soon as they are discovered:

1. Prevention of suppuration in the direction in which greatest improvement in treatment is to be attained in the future. Formation of abscesses may be averted by early treatment in eighty per cent. of the total number of cases.

2. The average shortening in suppurative cases is one inch; fifty per cent. are movable and fifty fixed; sixty-five per cent. walk well, thirty-five indifferently.

3. In cases without suppuration seventy-seven per cent. are good and twenty-three per cent. moderate recoveries. The average shortening is two-thirds of an inch; fifty per cent. are



freely movable, twenty-five per cent. have slight movement, twenty-five per cent. are fixed; eighty per cent. walk well, and twenty per cent. indifferently.

4. The mortality due to the disease is six per cent.; that from general tubercular infection arising from the joint-disease as a primary centre is well under five per cent.

**Moore: Congenital Heart-Disease.** (*Lancet*, November 9, 1889.)

Dr. Moore exhibited at the Pathological Society a specimen of heart-disease, occurring in a girl aged eight years, who died of abscess in the left lenticular nucleus with basal meningitis.

The upper part of the septum ventriculorum was absent. The pulmonary artery was very small, and opened from the right ventricle somewhat nearer middle line than normal.

Its origin was surrounded by a thickened base, and no valves were visible, unless this base was formed by thickened and adherent valves. The arch of aorta was dilated and so was the right auricle. The left common carotid and innominate were nearer one another than is commonly the case.

The patient had been blue and short of breath from birth, her fingers were clubbed, a loud systolic murmur was audible over the whole cardiac area, and also at the angle of the left scapula, loudest at the second left intercostal space, near the sternum. The cerebral abscess was probably due to embolus, from a firm ante-mortem clot contained in the right auricle, and coming very near the orifice of the aorta.

**Treves, F.: The Treatment of Scrofulous Glands.** (*Lancet*, September 21, 1889.)

After a discussion of the identity of scrofula and tuberculosis, the author proceeds to the general treatment of a case of scrofulous gland-disease under the following heads:

1. The patient should be placed under the best hygienic conditions.

2. Since a large proportion of strumous patients possess a feeble circulation, the skin from the neck to the ankles and the wrists should be covered with wool.

3. In the matter of medicines, there is little beyond the well-worn circle of iron, arsenic, quinine, and cod-liver oil.

The local treatment embraces the following points:

1. Any disturbance of the periphery, whence the affected glands derive their lymph-vessels, must be dealt with as a matter of the first importance. In the great proportion of instances a chronic inflammation is induced in the gland by

some trouble active in the area from which the lymphatics concerned arise.

2. Specific local applications to the glands have met with but discouraging success.

3. The most important local measure consists in giving rest to the part.

4. When suppuration has occurred, where a sinus persists or where it would be difficult to remove the relics of diseased glands, scraping is allowable.

It should under no circumstances be employed in cases where the skin is still sound.

Excision offers the simplest, the safest, and the most certain method of treatment.

**Luff: The Anti-Fermentative Treatment of Infantile Diarrhœa.** (*Lancet*, December 21, 1889.)

Several irritating substances resulting from the fermentation of milk are probably factors in the production of acute-infantile diarrhœa, yet the principal share of the blame rests with the milk or cheese-ptomaine, tyrotoxicon. Carbolic acid, creosote, resorcin, salicylic acid, salicylate of soda, naphthol, and salol have been given in the hope of checking the putrefactive changes in the bowel.

The treatment employed was that recommended by Illingworth, and consisted in the administration of one-fiftieth-grain doses of biniodide of mercury dissolved in iodide of potassium combined with one-grain doses of chloral hydrate.

It was shown experimentally that the soluble biniodide of mercury is an extremely soluble and diffusible salt, and that it possesses the property of combining with and rendering insoluble the milk ptomaine tyrotoxicon.

As regards the diffusibility of the biniodide of mercury, the author has detected it in the urine within two hours of its administration. He has never found that the soluble biniodide of mercury itself acts as an irritant of the intestine. Of eighty cases of acute infantile diarrhœa treated by this method the diarrhœa ceased within two days in seventy-two of the cases; in five of the remaining eight cases it ceased within four days, and in no case did it last over seven days.

**Syers: Chorea and Rheumatism.** (*Lancet*, December 21, 1889.)

The wide divergence of opinion concerning the relationship between acute rheumatism and chorea, as cause and effect, is well known.

The author has, therefore, recorded the result of an analysis

of one hundred and forty-six cases of chorea. The following results were obtained: Of the one hundred and forty-six cases, only 6.16 per cent. could by any possibility be attributed to acute rheumatism as their cause.

Rheumatic antecedents not causal existed in thirty-five cases, or 23.97 per cent. A rheumatic inheritance existed in forty-seven cases. The cause assigned by friends in ninety-four cases was nervous strain (fright, distress, and school over-pressure).

As regards the condition of the heart, in twenty cases a persistent systolic murmur was audible over the region of the apex, and of these twenty cases, eleven only had suffered from acute rheumatism.

A murmur, constant neither in force nor rhythm, was audible over the region of the apex in sixty-four cases, this murmur entirely disappearing as the patient recovered.

It is still commonly stated that rheumatism is one of the most efficient causes of chorea, yet several recent observations tend to results opposed to this view.

So long as vague pains in the limbs are admitted as evidence of rheumatism and the mere presence of a murmur is considered satisfactory evidence of cardiac disease of rheumatic origin, just so long will the ordinary views as to the intimate connection between chorea and acute rheumatism be maintained.

**Money: Splenic Enlargement and Heart Dilatation in Fever in Infancy and Childhood.** (*Lancet*, December 7, 1889.)

An infant under two years, with fever above 100° F., signs of bronchitis, and intestinal catarrh, will often be found to have a palpable spleen. The question is, Upon what is the swollen state of the spleen dependent? An infant not specially weak, not rachitic, syphilitic, or marasmic, may develop a splenic enlargement at the same time that signs of an ordinary catarrh appear in the bronchi and intestine.

The spleen is a soft, semi-fluid, semi-solid organ not overstocked with hard connective tissue in infancy, and expanding and contracting with surprising facility in harmony with changes in its near or distant environment, and the principal change is a digestive gastrohepatic one, as all physiology proves.

Seated on the splenic artery, the spleen tends to suffer changes in harmony with states of the general and portal circulation. The author believes that the spleen is as subject to variations in size as the penis, the turbinate submucosæ,



and the choroid plexuses. There cannot be the smallest doubt that this convenient expanding of the spleen is useful in the circulatory needs of the economy. The spleen is not only made up of a cavernous erectile tissue, but has much plain muscular tissue capable of being paralyzed for a shorter or longer time.

The typhoid process is of all acute febrile processes the one which can dilate the spleen or enlarge its size to the greatest extent.

The heart is not so frequently dilated by typhoid processes. That the heart is liable to dilate synchronously with the spleen is not often stated, but often occurs.

The problem to be solved is this: When the spleen swells, with signs of a febrile catarrh, is typhoid at work, or may the catarrh-causing cause dilate the spleen?

The author believes that temporary splenic tumefaction is in infants about as useful in the differential diagnosis of disease as is a temperature of  $101^{\circ}$ .

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### III.—SURGERY.

Collier, Joseph: Malformation of External Genitals in the Male. (*British Med. Journ.*, February 23, 1889.)

The child was first seen at the age of three weeks. It was extremely feeble, and died two weeks later. The anus and perineum were normal. The scrotum was also normal and well formed, except that in front the skin did not continue into a penis, there being no trace whatever of that organ. The testicles were fully descended and well formed, and there was a congenital inguinal hernia on both sides. There was no external urinary aperture, but on slightly everting the anal margin it could be seen, especially well during life, that the urethra opened on the anterior wall of the rectum about the eighth of an inch from the lower termination.

Richardson, T. A.: Avulsion of Leg and Part of Thigh with Great Sciatic Nerve; Amputation through Thigh; Escape of Cerebro-Spinal Fluid; Recovery. (*British Med. Journ.*, February 16, 1889.)

The child, aged four and a half years, was admitted to the Craydon Hospital with the left leg torn completely off a little above the knee, having been caught in the spokes of a revolving wheel. Nothing unusual occurred until the eighth day after amputation, when the dressings were found saturated with wet. Upon removal of the dressings, clear fluid was

seen dripping from the drainage-tube, and nearly a drachm was collected for examination. At night the dressings were again saturated and were wet the next day, but after that remained dry. The fluid presented all the physical and chemical characteristics of cerebro-spinal fluid, and amounted to something like thirty ounces. No similar case has been recorded. When a limb is torn off the nerves are usually broken or hang as appendages to the stump. Here, however, the great sciatic nerve was dragged by its roots from the stump, and was found to end above in three nearly equal cords, covered by a dense perineurium, which suddenly ended, leaving a bundle of nerve-fibres three inches long destitute of any covering. Dragging these nerve-roots out would involve rupture of the subarachnoid space, and place it in direct communication with the outside, along the track of the avulsed nerve. Why the discharge of cerebro-spinal fluid was delayed until the eighth day is not obvious.

Grattan, Nicholas: *The Treatment of Genuvalgum and other Deformities of the Lower Extremities by Means of the Screw Clamp.* (*British Med. Journ.*, February 9, 1889.)

A new instrument is described, with an illustration, designed to rectify deformity by rapidly breaking the bone at the wished-for spot. It consists of two curved arms of steel, covered with rubber and united at one end by a pivot. Attached to this pivot is a screw with an appliance at one end for making counter-pressure against the two curved arms. These arms may be set apart at any distance desired. Fracture is readily produced by placing the limb between the end of the screw and the curved arms and forcibly turning in the screw. Four cases of operation are reported in children whose ages ranged from three to twelve years. Fracture was effected in thirty seconds or less in each case, and the ultimate results were of the best.

Hitchcock, DeWitt: *A Lost Drainage-Tube.* (*N. Y. Med. Rec.*, 1889, 36, 543.)

The patient, a boy about seven and a half years old, had empyema, which was treated by a free opening into the pleural cavity. However, the suppuration continued, and he was unable to dispense with the drainage-tube until twenty months later, when Dr. Hitchcock made a careful exploration of the pleural cavity, and removed, after using considerable force to loosen it from its partial impaction, five and three-eighths inches of the lower end of the catheter introduced for the purpose of drainage.

Wadsworth, O. F.: Spastic Torticollis Apparently Due to Faulty Position of the Eyes, and cured by Tenotomy. (*Boston Med. and Surg. Journ.*, 1889, cxxi. 505.)

The patient was a boy nearly fourteen years old. He sat or stood with his head tipped to the right, his face turned a little to the right and inclined considerably forward, his right shoulder considerably lower than the left, the spine laterally curved with convexity to the left. In walking, the left shoulder was carried a little in front. There was no permanent contraction of the muscles of the neck, and the vertebræ were apparently normal. The eyes were not properly directed.

The left superior rectus tendon, which was large and broad, was fully divided, since which time both his head and trunk have a much better position, and the improvement still continues.

Berg, H. W.: Rachitic Pseudo-Paraplegia. (*N. Y. Med. Rec.*, 1889, 36, 534.)

There is an inability to use the extremities, owing to muscular disability, caused by the rachitic dyscrasia. The treatment of these cases is uniformly successful. The writer advises that form of diet which will be most readily digested by the patient, without regard as to whether the articles of food are rich in phosphates or not. Cod-liver oil, if digested, will do good in small doses. The most important therapeutical measure is the use of phosphorus, which he makes into a mixture as follows:

R Phosphori, gr. i;  
Alcohol absolut., ℥ ccel;  
Spt. menth. pip., ℥ x;  
Glycerinæ, ℥ ii. M.

Sig.—For a child two to four years of age, six minims *t. i. d.*, to be increased one drop weekly until ten drops are given; larger doses are unnecessary.

The writer also advises the use of massage and electricity, and, for the anæmia accompanying the rachitis, iron, small doses of *nux vomica*, etc.

Lediard: On Joint-Scraping. (*Lancet*, August 31, 1889.)

The author gives in this paper a *résumé* of his experience in joint-scraping, and follows it by a discussion of the subject.

He has operated on six knees, lost no patients, but had to amputate two of them. Two ankles were operated on, one of which did well; the other was amputated. There were two unsuccessful and fatal cases of hip-disease where scraping was tried.



The method consists in opening the joint and removing the diseased parts, with a hope that ankylosis or perhaps a movable joint may result. It is a much less severe operation than excision.

The object is "the least sacrifice of parts;" and as such should command every surgeon's attention.

Evidences of failure after scraping will be found, clinically, in continuation of more or less elevation of temperature, general failure of nutrition, persistence of pain on palpation of joint, and failure in obtaining a certain amount of ankylosis.

The author believes that six or eight weeks is the length of time necessary to wait after scraping before resorting to further operative interference.

As to what joint-scraping is suited, the writer believes that a better result is obtained in the elbow after excision; and that in regard to other points the question is still an open one.

**Miller: Two Suggestions for improving the Operation of Excision of the Knee-Joint for Strumous Disease.** (*Edinburgh Medical Journal*, July, 1889.)

To insure a satisfactory result, the whole of the diseased synovial membrane must be removed. To accomplish this, after reflecting a semilunar flap of skin upward, well above the patella, cut through the tendon of the extensor of the thigh a little above the patella and also through the fibres of the vasti. The synovial membrane is thus exposed, and it is then easy, cutting in the cellular tissue covering it, to push up the muscular substance, and to draw down the thickened synovial membrane and to cut it at its attachment. In this way four-fifths of the membrane is removed in one mass with the patella embedded in it. The membrane covering the ligaments should be removed by the Lister sharp spoon. The ligaments should be scraped before they are cut till they appear clean and white.

The skin in knee-excision cases lies in loose and redundant folds over the approximated bones, and may be removed as follows: Make an incision from behind the one condyle to behind the other, across the front of the knee at the level of the tibia. Make another from the same points over the centre of the patella. This leaves an elliptical portion of skin which is left attached and is removed with the diseased synovial membrane.

A table of eighteen operations is given, of which fifteen were successful; three suffered amputation later, none died. The average time in hospital was eighty-seven days.

## Bibliography.

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### A GUIDE TO THE DISEASES OF CHILDREN.

BY JAMES FREDERICK GOODHART, M.D., F.T.C.P.

Rearranged, revised, and edited by Louis Starr, M.D., Philadelphia  
P. Blakiston, Son & Co., 1889.

THIS work is rightly entitled "*A Guide to the Diseases of Children.*" It certainly is not a complete manual for use as a reference book for the general practitioner. It is a compilation of *hints* as to diagnosis, treatment, etc., of children's diseases, gleaned evidently from practical clinical experience, and on that account more valuable, perhaps, than a book more complete in the discussion of the ailments of children from a theoretical and, we must add, a more scientific stand-point. From the title and from various sentences scattered here and there through the work we judge that it never was the intention of the author to make it the exhaustive treatise on pediatrics that Meigs and Pepper's or J. Lewis Smith's works, for example, are. "Having given these few hints upon what to avoid," etc., he says. Again: "It is impossible, in a short manual, to go much into detail in a preliminary chapter, but one or two points may be selected," etc. The points selected are excellent, but the reader feels that they are selections, that there is something left unsaid that detracts from the value of the work as an authoritative and exhaustive treatise.

The merits of the book are many. Aside from the praiseworthy work of the printer and binder, which gives us a print and page that delight the eye, there is the added charm of a style of writing that is not wearisome, that makes its statements clearly and forcibly, and that knows when to stop when it has said enough. The insertion of typical temperature charts certainly enhances the value of the book. It is rare, too, to find in any text-book so many topics treated of. All the rarer and out-of-the-way diseases are given consideration. This we commend. It makes the work more valuable.

The twenty pages devoted to the subject of "Feeding Infants and Children" give the latest and most advanced ideas upon this certainly one of the most important and trying questions for the practitioner, be he young or old. Numerous formulæ are given for preparing different foods. "As a last resource, a wet-nurse should be obtained." This seems to us radically wrong. In families able to obtain a wet-nurse, one carefully selected should be obtained when the mother's milk fails, and the child should be nursed upon human milk whenever it can be obtained, at least through the first summer, always a period of danger for an infant. The article on infant-feeding is one of the most valuable in the book. Yet there is no mention made of "malted milk," one of the best of the

infant's foods. And we think that while the peptogenic milk-powder is excellent in so many cases, certain objections to it should be spoken of,—viz., that its preparation is not practicable in every household, requiring a degree of skill and patience not possessed by all housekeepers; that it disagrees with a considerable number of babies. This food is theoretically excellent; practically it does not come up to the standard. It seems a little incongruous, however, to devote thirty pages to the consideration of the subject of rickets, a disease very rare, at least in this country, and but twenty pages to infant-feeding, the most perplexing and difficult problem we have to solve in connection with the therapeutics of childhood.

We do not always agree with Dr. Goodhart as to the proper dose for children. For example, on page 27, two grains of Dover's powder are recommended as the dose for a two-year-old child. To our notion this is too large a dose to give in ordinary cases.

We question the propriety of speaking of "typhlo-peritonitis" as a disease of the peritoneum, "because the student is apt to think much of the ulceration and less of the peritonitis." That the serious and too often fatal consequence of disease in the region of the vermiform appendix is a peritonitis none will deny. But why not, then, adopting the same course of reasoning, speak of a perforating ulcer of the stomach as a peritoneal disease, because the immediate cause of death in such a case is the resulting peritonitis, and the student's attention should be directed to this, the result, rather than to the ulcer, the cause? A suppurative salpingitis may be the starting-point of first a local and then a general peritonitis, but it is in the beginning a salpingitis, and should be, we think, so spoken of and so taught to students. So an appendicitis, starting as such, should be so spoken of. If from any cause, as perforation, a local or general peritonitis occurs, let that be so spoken of. And this, too, for the reason that the surgery of to-day is looking, in its treatment of these cases, not alone to the peritonitis, but as well to the trouble in the appendix, faecal stone, or whatever it may be that is the cause of all the difficulty. The pathology of "typhlo-peritonitis," as our author styles it, is none too clear in any of our text-books. The obscurity is certainly not dispelled by the article in this volume.

Measles, scarlet fever, diphtheria are well and quite fully discussed. In our mind German measles is a distinct and separate affection. Our author seems to hesitate as to its true position. Perhaps the question as to the proper sphere of intubation has not been fully decided. "Whether it will ultimately take rank as a serviceable measure in diphtheria is doubtful, but it may probably do so for cases of simple laryngitis and œdema." It is our conviction that intubation has already taken rank as a serviceable measure in diphtheria, and that it ought to continue to hold that place. That it is a measure of greatest service, especially in simple laryngitis and œdema, seems to be a settled fact. The true position of the two operations, tracheotomy and intubation, is not one of hostility or even rivalry; they should be, as Ranke has said, aids and friends, the one helping where the other fails. This being the case, a description



of the technique of the operation would be in place in this work. It is an operation not so difficult and formidable as commonly supposed. Whoever has seen O'Dwyer, or Dillon Brown, of New York, or Waxham, of Chicago, make intubation, must feel that while, perhaps, never able to acquire the skill and dexterity of these experts, yet practice must enable him to make intubation in a satisfactory, if not expert, manner. We are pleased to note the stress laid upon the contagiousness of diphtheria, and upon the necessity of treating it promptly, thoroughly, and frequently, as a local disease. We occasionally find a physician, even at this day, who denies the fact of its local origin, and who gives his remedies only every two to four hours. This must not be understood as undervaluing the general treatment so important in connection with this affection.

The remark that malarial fevers in children are uncommon should be modified as regards infantile remittent. With us it is common, and it is sometimes difficult to differentiate.

The advisability of omitting the brackets of the former editions which contained the notes of the American editor can be questioned. We wish they had been retained. For, as stated above, the book is one full of practical hints for practitioners rather than a text-book for students, and the practitioner desires to know always from whose experience the suggestion arises.

In conclusion, we only express the hope that we may have a text-book at a day not far distant written by the accomplished editor. We want to give him full credit for writing an entire book, and along with the eminent trio of American authors on Diseases of Children—Smith, Pepper, Jacobi—to place the name of Louis Starr.

C. W. E.

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DISEASES OF THE MOUTH (NON-SURGICAL).

BY F. FORCHHEIMER, M.D.,

Professor of Physiology and Clinical Diseases of Children, Medical College of  
Ohio, Cincinnati, Ohio, etc.

(Continued from June Number.)

IX.—THE TONGUE AND THE MOUTH IN DISEASE OF  
REMOTE PARTS.

THE mouth can be so easily examined that it affords certain guides, more or less universally accepted, to diagnosis. The older physicians were very careful about the examination of the mouth, especially the tongue; but at present, the diagnostic value of certain changes is largely disputed. While it would be difficult, in individual cases, to base a diagnosis upon the appearance of the mouth, yet there are to be found combinations of appearances which leave little or no doubt as to the disease which produces them. We are disposed to smile incredulously at some of the descriptions found in the works of fifty years ago, yet the methods of exact diagnosis have multiplied so rapidly, and purely clinical evidences are so often neglected, that it is questionable whether we have a right to do this in all instances. Certain it is that the older physicians,

with their limited means, made diagnoses that were very wonderful; and equally certain is it that we, in our generation, with all our physico- and chemico-medical means, overlook very important conditions. Indeed, it might be said of us that, on account of all these diversions, purely objective examination is on the decline; whether a forward or retrograde movement it is not our purpose to discuss, but where the older physician would examine the tongue in a case of typhoid fever, the modern examines for the bacilli in the dejections. We have gone through the periods of pure clinical medicine, the medicine of pathological anatomy, and are now in the throes of etiological medicine. Every time we go through one of these periods, each one making a decided advance, a little is dropped of that which has been common knowledge, principally because this common knowledge cannot be made to agree with the theoretical views held at the time. Each new method of examination supersedes some old one, possibly not covering all the ground of the older one, but, nevertheless, that knowledge gained by the older one, and not gained by the newer, is lost sight of.

One of the things that has been treated of in a step-motherly way is the examination of the mouth. It is true that no patient considers himself thoroughly examined until he has "stuck out his tongue" at the doctor; but usually the examination is performed in a perfunctory manner, and the physician gains very little knowledge. On the other hand, there is that class of physicians which makes the examination of the tongue the principal basis for diagnosis, and in intestine troubles this and an examination of the stools seems to be sufficient to give a clear insight into the case. It seems hardly necessary to state that the truth lies in the middle; that in some cases the tongue is of great clinical importance, and that in a great many others its examination for diagnostic purposes is without value. It goes without saying that no case is completely examined unless the mouth has been looked into, and yet, in a great many cases, nothing is gained by this examination.

In infants the tongue can only be examined by looking into the mouth, and the same rules that have been put down elsewhere hold good for this examination. The appearance of



normal infant's tongue has also been described in a previous chapter, so that at present we are engaged upon a discussion of the tongue in disease. The tongue is affected as the result of local or general conditions. The changes that take place are in the direction of size, shape, color, and coating or fur. As the tongue is a muscular organ, endowed with both nerves of special sense and nerves of motion and sensation, we may have changes which affect either one or all of these structures, producing paresis or paralysis, loss of taste or sensation. Loss of motion is easily diagnosticated in children; not so with loss of taste or sensation; in infants the latter would almost be impossible, in older children not so difficult.

The tongue changes its size and shape principally as the result of the action of local causes. It becomes too large in glossitis; it is somewhat swollen in those forms of stomatitis (catarrhalis, ulcerosa) in which its mucous membrane becomes infected, and this infection is carried into the body of the tongue. Glossitis is an extremely rare affection in children, due, possibly, to the absence of causes acting principally during adult life. Congenital largeness of the tongue is not rare; this is usually associated with one or the other form of idiocy, and the open mouth, with the large protruding tongue, the saliva running out of the mouth, is sometimes sufficiently characteristic to lead in the right diagnostic direction. Abnormally small tongues are usually the result of malformation, and are very rare.

The size of the tongue usually affects its shape; it is an innate tendency to keep the tongue within the mouth, and it is only under abnormal conditions that it is found protruding for any great length of time. Being confined, the teeth leave their impression upon the tongue's border, and, furthermore, as long as the tongue can be retained within the mouth it is usually much swollen in its vertical diameter. These conditions are somewhat different in children, but it is not uncommon to find the marks of the teeth upon the sides of the tongue.

The blood affects the color of the tongue, as a whole, more than any other cause. When the blood cannot be returned to the general circulation from the tongue, this organ becomes

cyanotic, of a slight but decidedly bluish tint, or even purple. Constant and persistent coughing (pertussis) produces this effect, and the color of the tongue is sometimes of great value in establishing this diagnosis. In measles this change has already been referred to before, although it seems to have been overlooked by other authors. Monti (*Jahrbuch f. Kinderheilkunde*, N. F., vi., p. 27) says, "The tongue does not participate in the diseased process of measles." Whether this slight cyanosis is due to the cough that always accompanies measles, or whether it is due to some change within the tongue itself, I am not prepared to state. It is present in all the cases of measles that have come under my observation for some time; but it seems impossible to disassociate it from the act of coughing; so much, however, may be added that, in cases of bronchitis, in which the cough seems to be very much more violent than in many cases of measles, the bluish discoloration may be absent. As a symptom of general cyanosis, a blue tongue is of some importance. Reference need only be made to the diagnosis of skin discolorations in the colored race, and this statement becomes very apparent when the statement is made that I know of no way by which the diagnosis of cyanosis can be so easily made in a full-blooded negro child except by examining its mucous membranes. Even in white children the cyanosis of heart trouble or pulmonary affection, especially the chronic forms, is seen to great advantage in the mouth.

The absence of color, or paleness, is caused by all those conditions which produce anæmia. As a result of hemorrhage, the tongue may suddenly become comparatively colorless. In Hodgkin's disease, leucocythæmia, chronic anæmia, the cachexia of malaria, the tongue is markedly pale. In all wasting diseases of children the tongue seems smaller but decidedly changed in color. It is, however, the chronic forms of disease especially that produce this change in the color of the tongue as a whole; acute processes either do not produce it or it is masked by the coloring given to the mucous membrane. It is very difficult at times to get an accurate idea of the color of the tongue-substance; this, naturally, being more or less changed by conditions of the mucous membrane. That part

of the tongue resting upon the floor of the mouth is, manifestly, more available for this purpose than the dorsum; in very young children it is difficult to get at, and, in older ones, where there is inflammation in the oral cavity the filling of the blood-vessels masks the color of the tongue.

The furring of the tongue is that portion of our subject that has been most studied. The fur upon the tongue is, when examined microscopically, seen to be made up of epithelial cells, molecular detritus, and organisms of various kinds, held together by mucus. The organisms are those usually found in the mouth; sometimes we find pathogenic organisms, most frequently the pneumococcus and the pus-producers. Parts of the papillæ are also found, depending largely upon the force used in scraping off the tongue. With the exception of the pathogenic organisms, then, nothing specific is found in this fur, and it would be futile to attempt to speak of any specific coating for any given disease, on the basis of what goes to make up this coating. But if we go one step further, it will be seen how a general process may be followed by the same process upon the tongue. We abstract entirely from those conditions, like scarlatina, the geographical disease, or syphilis, in which a definite local process is always followed by a well-specified appearance, which can be looked upon as characteristic, although I must confess to having seen a strawberry tongue in several instances without scarlatina. Three things are requisite in order that the mucous membrane which covers the tongue shall be in its normal condition,—moisture, a proper nutrition for the epithelial coating, and sufficient motion. Anything which affects either of these three factors will cause some change in the covering of the tongue. If, in diseased conditions, there be added those causes which produce a deposit of any foreign material, such as coloring matters, in the coating of the tongue, we have all the elements required for explaining the various kinds of fur. Flat epithelium, as one of the lowest types of tissue in the body, is very easily affected by any slight deviation from its normal nutrition. The epithelium found upon the tongue is more or less opaque, depending upon the distance it is removed from the cavity of the mouth; the lower layers of cells, the younger ones, are



translucent; the older ones have what has been called a more granular structure. The greater the number of the latter the thicker the fur; the greater the number of the former the thinner. When anything occurs to hasten the change from young to old, so that there are a great many more old, opaque cells than normal, the tongue will be furred. When, on the other hand, anything occurs to prevent this change or to materially retard the formation of epithelium, the tongue will be without fur and will seem red. The effect of moisture is in two directions: first, upon the appearance of the cells, and, secondly, upon their removal. When there is too much moisture in the mouth, the cells are short-lived and easily become converted from young to old; so that there is a furred tongue. When there is too little moisture, the cells remain too long upon the dorsum of the tongue, and therefore the tongue will be furred. An example of the former condition is found in the furred tongue of salivation, of the latter in mouth-breathers. In long-continued fevers, in which the absence of moisture is the predominating cause, we have a peculiar condition of dry, white, or yellow fur, quite thick and adherent. When this is removed, in the course of the disease, there is left a glistening, dry tongue, without very much fur, the latter condition due, however, to a lack of nutrition, so that the lower layers of epithelial cells are not supplied in adequate numbers.

When there is not sufficient movement of the tongue there results a fur; because fewer of the old cells are removed than would be under normal circumstances. In paralytics we constantly see a furred tongue; in any condition in which sensation is obtunded, high fevers, soporose or comatose states, the same will be observed. These three factors, combined with the rest, produce the dry, coated tongue of typhoid conditions, which finally result in cracks of the whole mucous membrane, giving rise to small hemorrhages, which give to the tongue a brown or reddish-brown color.

The supply of nutrition to the epithelial cells is of importance, in that the cells that grow old have to be replaced by young ones. When this cannot be done, no fur is produced, but the tongue has a red appearance; and if the coating be

examined under the microscope, few adult cells are found. We find this condition, especially, in long-continued disturbances of general nutrition, in adults in cancer, in children in pædatrophia or long-continued chronic intestinal catarrh. A supply of too much nutritive material, overfilling of the lymph-spaces from too abundant blood-supply, acts very much like too much moisture. The cells are hastened in their course of life, too many older ones are produced, and there results furring. The place of deposit of this fur depends very much upon the size and shape of the tongue; where the tongue does not come in contact with any other part of the mouth it will be thick, at the edge it will be rubbed off, leaving a red outline. This is the character of cyanotic tongues; especially pertussis. In fevers the amount of nutritive material supplied plays a very important rôle, but we can only repeat what we have stated before,—that there is no necessity for the production of the classical typhoid tongue, with crusts and fissures, as this can be readily prevented by supplying the factor of moisture.

Great stress has always been laid upon the foreign admixtures; especially to the coloring matters. For instance, a peculiar coating of tongue has been accepted as characteristic for malarial troubles,—a yellow coating at the base of the tongue. A yellowish tongue has always been associated with liver troubles, and has been followed up by a dose of calomel. There are many pigments that will produce a yellow color besides bile-coloring matter, both from within and upon the tongue, and a diagnosis of a biliousness, which means nothing, is on a level with the practitioner who is willing to prescribe by looking at the tongue only. If we take into consideration that, in that form of trouble in which we know that bilirubin is in the circulation, jaundice, we frequently find the tongue clean (Hench), often white, and rarely yellow, we certainly must be careful in drawing the conclusion that, because the tongue is yellow the liver is at fault. It is just as probable that some chromogenic organisms, or some extraneous substance is the cause of a yellow tongue. Every one has seen patients who are never without a slight yellow fur and yet seem to enjoy perfect health. The most ludicrous mistakes occur to those who overlook the fact that articles of food and

medicinal agents give their color to the fur; rhubarb produces a beautiful liver tongue. Deposits of pigment in the mucous membrane of the tongue are of much greater diagnostic value. The black pigments of melanosis, the malarial cachexia, or Addison's disease, do much to draw the attention of the physician in the right direction.

Ulcers upon the tongue have been described in other chapters. Here is one form of ulceration which, from time to time, is described as a new discovery and considered as a pathognomonic sign for whooping-cough. It is a symptom that has been noticed by a great many of the comparatively older writers; indeed, no complete description of whooping-cough could be written without its mention, but it is not to be looked upon as pathognomonic. In certain conditions, when a child has a long-continued cough, there appears first a cloudiness of the frenulum linguæ, which is followed by a loss of substance more or less deep. This ulcer cannot be produced unless the child has its two central, lower incisors, and occurs only in violent, persistent coughs in which the tongue is forced out of the mouth. When the cough is very severe and the child has its lateral as well as its central incisors, that part of the tongue which, in coughing, is forced and rubbed over these teeth may also become ulcerated. This ulcer of the frenulum has been seen by a great many authors in coughs that were not pertussis, and I can add my own testimony to the correctness of this observation. It will be found in bronchitis; sometimes, but rarely, in pneumonia; more commonly in the cough associated with enlargement of the bronchial glands. The appearance of the tongue, as a whole, the coating, and the cloudiness or ulceration of the frenulum linguæ are very valuable aids to the early diagnosis of whooping-cough.

The mouth plays a very important rôle in the differential diagnosis of the acute exanthemata. On account of the fact that the eruption makes its appearance in the mouth in from one to two days before developing upon the skin, valuable knowledge can be gained by careful attention to the mucous membranes. Especially is this the case in the early, differential diagnosis between measles and scarlatina. The changes in the tongue, in measles, have already been referred to. In



the majority of cases of measles, at least forty-eight hours before any eruption is to be seen about the face, we can observe a decided reddening of the posterior pillars of the fauces, and with this a small reddish, or reddish-blue, papular eruption upon the soft palate, hemorrhagic in hemorrhagic measles. This lasts a few days, disappears, and not infrequently leaves pigmented spots. In scarlatina, the anterior pillar of the fauces and the tonsils are first reddened, and this is followed, in a very short time, by the appearance of the eruption, in the form of a bright red erythema, upon the centre of the soft palate. From here it extends, sometimes developing over the posterior part of the hard palate, sometimes over the whole mouth; the greatest development of this eruption is arrived at before the rash develops upon the skin. Although the whole mouth may remain red, during the early course of the disease it is more diffuse, not so punctate and not so bright. Hand in hand with this goes the development of the so-called strawberry tongue. At first the tongue is covered with a milky fur; very soon, however, the papillæ, especially the fungiform papillæ, become enlarged and very prominent, the white fur begins to disappear, first about the edges and then towards the centre, and we finally have a tongue deprived of all fur, with the filiform papillæ apparently gone, but the fungiform very prominent, giving in all the characteristic tongue of scarlatina. This may be absent in very mild cases, and, again, may be present in other conditions besides scarlatina. Both of these occurrences are so rare, however, that they may almost be left out of consideration. In variola the erythema begins upon the posterior wall of the pharynx, and upon this, in a short time, there are developed papillæ, which, in their turn, are rapidly converted into pustules. In variola, the whole mouth participates in the process, and we see pustules upon the soft palate, the uvula, the tonsils, the hard palate, the cheeks, and the tongue. All this is not uncommonly accompanied by more or less salivation, swelling of the mucous membrane, and enlargement of the tongue. In varicella we never see any of the preparatory stages, but always the pustule or small ulcers which are left where these pustules have existed. My experience has

been opposed to that of Lörj, who says that pustules are rarely developed upon the mucous membrane. I have rarely seen a case of varicella in which there could not be found one or more pustules in the mouth or in the pharynx. These changes, briefly described, have been of the greatest assistance to me in the early differential diagnosis of the acute exanthemata. Especially has this been the case in colored children. The diagnosis of scarlatina, in a full-blooded negro child, becomes almost impossible when the changes in the mouth are not taken into consideration.

The appearance and movements of the tongue are very much affected by lesions of the nervous system. In paralytics one-half or both halves of the tongue may be affected. When one-half is affected, as the result of a cerebral lesion, motion and even nutrition become changed, the paralyzed side becomes smaller, and the tongue, when in the mouth, deviates to the healthy side, when protruded, to the paralyzed side. In children, it is especially post-diphtheritic paralysis that affects the tongue. Disturbances in the nerves leading to the tongue may also produce paralysis, but this is very rare in children. Labio-glosso-laryngeal paralysis is a disease of later life, and, therefore, does not play a very important rôle in the semeiology of the mouth.

(To be continued.)

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## A PLEA FOR EARLY OPERATIVE INTERFERENCE IN ACUTE PERITONITIS, WITH ESPECIAL REFERENCE TO THE SO-CALLED IDIOPATHIC PERITONITIS IN CHILDREN.

BY G. FRANK LYDSTON, M.D.,

Chicago, Illinois.

A PERUSAL of the record of results of strictly medical treatment in acute peritonitis since that disease was established as an entity by Bichat in 1802 is not conducive to professional conceit. Prior to the introduction of the opium treatment by the late Dr. Alonzo Clark, in 1850, the disease was almost invariably fatal. Prior to Clark's innovation, opium had been

given in moderate doses by Stokes, Graves, and others, for its anodyne effect. Clark, however, advocated putting the bowels, as he expressed it, in "opium splints" through the medium of full narcotic doses of the drug. According to this eminent authority the criterion for the administration of the drug is the production of the following symptoms: "Subsidence or marked diminution of the pain; some or considerable tendency to sleep; contraction of the pupils; reduction of the breathing to twelve respirations per minute. In the favorable cases a considerable reduction in the frequency of the pulse; a gentle perspiration and itchy state of the skin, or oftener the nose; absolute inactivity of the bowels, and after a time subsidence of tumescence and tenderness and some suffusion of the eyes."

This treatment was immediately adopted by the majority of progressive physicians as a routine measure, and has, strange to say, for forty years been the main reliance. Reaction against this routinism is but just now attaining prominence. In no other field of medicine has there been a less pronounced spirit of progressiveness during all these years than in the treatment of peritonitis. The ready adoption of the method and the implicit reliance which was placed upon it were probably due to the fact that previous methods of treatment had signally failed, and the new method had, at least, the merit of saving a certain proportion of cases, and under its use the sufferer from the disease was at least comfortable. As compared with the success attainable in other acute inflammatory affections, the opium treatment of peritonitis has not proved a brilliant success.

In an excellent article upon peritonitis, Dr. Stiles Kennedy,\* of St. Louis, Mich., concisely presents the true status of the opium treatment when he says, "Speaking for myself, with thirty years' active practice, I pronounce the treatment a miserable failure. All patients do not die under the opium treatment, but seventy-five per cent. of them do." With a much shorter period of observation, the brevity of which, however, has perhaps been compensated for, in a measure, by several

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\* *American Lancet*, December, 1889.



years' hospital experience, I can heartily endorse Dr. Kennedy's position. Great as was the advance in therapeutics instituted by Dr. Clark, it unfortunately came to be regarded as the *ultima thule* of therapeutics of abdominal inflammations. Who is there among us but will bear me out in the assertion that any attempt to classify and differentiate abdominal inflammations with regard to a discriminating selection of therapeutical methods has been regarded as rank heresy—I was going to say malpractice—ever since the opium treatment came in vogue? Even those who have discriminated between traumatic and so-called idiopathic cases of peritonitis have failed, until quite recently, to discriminate in the matter of treatment. Septic cases, in which apparently the principal object to be attained was the draining away of putrid materials both from the abdominal cavity and *via* the intestinal canal, have been treated upon the same principles as cases which were apparently of non-septic origin. There is a feeling at present among progressive physicians—and to strengthen this is the principal object of the paper—that peritonitis is, so to speak, more of a surgical disease in general than it has been regarded heretofore. Speaking for myself, with a keen realization of the hopelessness of the majority of cases when medically treated, and I believe a proper appreciation of the origin of the disease in the majority of cases, I feel warranted in the assertion that peritonitis should nearly always—I was going to say invariably—be relegated to the domain of surgery. To put it vulgarly, I might support this position by the assertion that the physician has had an inning of forty years' duration, which—to carry the base-ball phraseology a little further—has resulted in a goose egg. It is but fair that the surgeon now be given a chance to compare methods at least; as far as experience has gone thus far the results are certainly more encouraging than those attained by medical treatment. The more thoroughly the pathology of peritonitis is studied the more obvious the truth of this assertion becomes. Like most surgeons, I now see few cases of peritonitis which are not distinctly recognized as traumatic. As most cases only are supposed to be idiopathic, I see comparatively few such. I believe, however, that a proper appreciation of the true

pathological and etiological status of the disease on the part of the general practitioner will enable the surgeon to observe and treat such cases more frequently.

The etiology of peritonitis has attracted considerable attention. It has usually been divided into idiopathic (primary and secondary) and traumatic. I have no hesitation in putting myself upon record as believing that there is no such thing as primary idiopathic peritonitis. The more carefully we inquire into the history of the disease the narrower the range of the so-called idiopathic cases. To attribute the disease spontaneously, in the absence of any known organic cause, to exposure to cold, dietary causes, etc., is, it seems to me, simply a substitute for an honest expression of ignorance. That the disease may be secondary to certain constitutional affections is probably correct. It has been attributed to rheumatism,\* erysipelas† and the various eruptive fevers, especially scarlatina,‡ equinia, or glanders,§ septicæmia, and purulent infection.|| Its dependence upon puerperal septicæmia, uterine and pelvic inflammations is well known. Anstie describes epidemic infectious peritonitis as being due to sewer-gas. Certain chronic constitutional diseases, such as gout, Bright's disease, and tuberculosis, are well-known causes. Renal disease, as a cause of abdominal inflammation, is mentioned by several excellent authorities.¶

Traumatic peritonitis is not always easily traced to its cause. There are many cases, of course, which are readily so traced. A history of injury with palpable lesion, either in the form of penetrating wounds or such conditions as contusion or rupture of the liver, spleen, stomach, intestines, kidneys, bladder, or womb, is most usually elicited.

The relation of cause and effect is sufficiently plain in the case of operative interference with the abdominal cavity or its contents. Certain rough manipulations of the abdomen have

\* Vivaut, 1884.

† Cheurlin, 1879.

‡ Moore, *Dublin Journal Medical Sciences*, 1876.

§ Mahomet, *Schmidt's Jahrbücher*, 1884.

|| Hilton Fagge, 1873.

¶ Woillez, *Bull. de la Soc. Méd. des Hôp.*, 1885; Hilton Fagge, *Guy's Hospital Reports*, 1873-75.

been known to produce the disease. Compression of the left ovary in an hysterical woman has been known to produce the disease.\* I mention this especially to show how slight a cause is sometimes sufficient. The dependence of the disease upon minor gynæcological operations, intestinal perforation from various causes, such as typhoid fever, typhlitis, perityphlitis, etc., is well recognized. Although it is supposed that idiopathic peritonitis may occur at any age up to that of fifty-five years, it is a well-recognized fact that idiopathic cases are relatively much more frequent in children, the frequency being in inverse proportion to the age.

Children are very often taken with the disease while apparently in a condition of perfect health. This, it seems to me, is in itself inconsistent with the idiopathic theory. Another fact which is significant is that adhesions and pus are an invariable result of idiopathic peritonitis. One of the best arguments in favor of surgical interference that I have seen is the naïve assertion of Gauderon that recovery sometimes follows the escape of pus through the umbilicus. This mode of termination was noticed by him in eleven cases out of twenty-five, and of these eleven cases there were eight recoveries. It would be interesting to note how many of the remaining fourteen cases recovered, as showing to what extent the chances of recovery were directly dependent upon the exit of pus; *i.e.*, in how far nature's surgery was a hint to the surgeon. It has occurred to me that the reason for the greater apparent frequency of idiopathic peritonitis in children is due to their inability to describe the particular accident to which the inflammation should be properly attributed. Children receive so many bumps and falls that, even when well advanced in years, they are not likely to attribute any special importance to any particular accident. The peritoneum being more sensitive in children, their greater susceptibility to peritonitis from slight injuries is at once obvious.

Leaving secondary peritonitis out of the question, I do not believe in the existence of the idiopathic variety of the disease in young children. It is very easy to injure the perito-

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\* Comby, *Le Bull. de la Soc. Anat.*, 1880.



neum, especially in young subjects, in which the strength and thickness of the abdominal walls are by no means proportionate to the degree of protecting the viscera. Abdominal fat in young children, for example, is not very abundant. The sensitiveness of the abdominal contents in children to various causes of irritation is a well-recognized explanation of the excessive mortality rate of childhood. Not only are the viscera relatively more sensitive than in the adult, but the peritoneum is also a *locus minoris resistentiæ*. Injuries which are so slight as to be innocuous to the adult may produce peritonitis in young children. I believe that peritonitis in young children follows very often injuries so slight that the child never complains of them. I am firmly convinced that the so-called idiopathic peritonitis always follows a lesion of greater or less severity. Severe straining at stool, blows upon the abdomen, producing bruising of the intestines, parietal or visceral peritoneum, or mesentery, may produce it. A comparatively slight violence exerted upon the stomach when full—and we all know how disproportionately prominent the distended stomach in young children is—may give rise to peritonitis. Very slight injuries to other viscera, and especially the liver, may give rise to the disease. The bruising may be so slight as to leave no trace which is visible post mortem, and yet be sufficient to light up general peritonitis. A bruise over the distended bladder, or if the bladder be not bruised, a wrench of its peritoneal attachments, incident to a fall, may give rise to the disease.

A point which I desire to again emphasize is the disproportionate size and weight of the abdominal contents in young children as contrasted with the natural provisions for their protection. As a corollary of this point, I venture the assertion that falls and jars may in children produce concussion of the abdominal contents with resultant strain (with or without slight rupture) of those retentive ligaments which are either derived from or invested by peritoneum. There is certainly in young children considerable disproportion between these retentive ligaments and the weight and dimensions of the organs which they are intended to support.

A cause of peritonitis in children which I believe will in

years to come be frequently recognized is inflammatory affections in the region of the cæcum. I believe that typhlitis and perityphlitis, due to enteroliths or other foreign bodies in the vermiform appendix, constitute one of the most frequent causes of so-called idiopathic peritonitis in young children. The reason, it seems to me, that this is not more frequently recognized is the fact that in children the disease runs a very rapid course, has a more pronounced tendency to general extension, and kills a little patient before those tardy evidences of localized inflammation and suppuration are recognized by the physician. How frequently we overlook cases of perityphlitis in the adult, treating them perhaps for typhoid fever or some other disease for days or perhaps weeks before we are enabled to make a positive diagnosis! It is all very well for the surgeon who is called in at the eleventh hour to criticise the physician for failing to discover the pathognomonic induration in the ileo-cæcal region at an earlier day, but there is a question in my mind whether the surgeon himself, in many instances, could have done any better. With a full realization of the possibilities of error in the differentiation of typhoid and perityphlitis, I have myself remained in doubt for days at a time in cases in which I afterwards operated. If, then, we make such mistakes in the case of the adult, how much more likely are we to overlook localized inflammations in the child until too late to be of service.

The disease begins abruptly, extends quickly, and within very few hours perhaps we have an enormously distended abdomen and all of those physical conditions which absolutely preclude a careful and thorough examination which allows an accurate diagnosis. Often, in my opinion, the little patient will die of acute general peritonitis which has originated in perityphlitic inflammation long before an adult would perish under the same conditions. The formation of lymph, plastic material, and protective adhesions does not occur in the child because of the rapid extension of the inflammation. A child dies unoperated on, and the case is recorded as another sad illustration of the fatality of idiopathic peritonitis in children. Authorities are united in the opinion that pus is rapidly and almost invariably formed in the peritoneal cavity in children.

As already stated, a number of cases of recovery have occurred in which the pus escaped spontaneously. Under such circumstances the chances of life of the patient are entirely dependent upon the caprice of nature. If the pus escapes early enough, or burrows in a favorable direction, the patient may recover. If nature is unkind, death results.

In a general description of perityphlitis, Drs. E. W. Lee and J. B. Murphy, well known and competent surgeons of Chicago, concisely state the situation as follows: "Are we doing our duty to our patients by allowing them to take such chances? Why should pus in this locality be allowed unaided to find its favorable or unfavorable exit in contradistinction to the well-established rule to properly aid its escape in all other parts of the body where accessible? Who has not seen a similar case to this? The patient is taken suddenly ill, complains of pain in the abdomen, has vomiting, a rapid, feeble pulse, and a pinched, anxious expression of countenance. Examination reveals the abdomen to be uniformly distended and sensitive; in short, with all the symptoms of acute peritonitis, usually terminating fatally on the third or fourth day. *Were we permitted to make autopsies on all the cases presenting the above history, we would find that a large percentage of them were produced by the rupture of a perityphlitic abscess into the peritoneal cavity.*"

I will apply these remarks especially to cases of peritonitis in children; and I believe that I am warranted in asserting that, in a large proportion of cases of fatal so-called idiopathic peritonitis in children, we would find, were we permitted to make an autopsy, that the disease had originated in perityphlitic inflammation. Rarely, perhaps, would we find the inflammation to be secondary to an abscess which had ruptured. To present my ideas more concisely, I believe that many cases of peritonitis in children are due to perityphlitic inflammations which are similar to those occurring in the adult, with the exception that in the child they are followed immediately by acute general peritonitis, while in the adult intermediary changes about the cæcum occur. In cases of traumatic origin, the site of the injury might escape observation because of the rapidity with which ecchymosis had disappeared.



Regarding the dependence of peritonitis in children upon slight traumatism, I have in my own limited experience met with a number of cases which were supposed to be idiopathic, but in which careful inquiry upon my part elicited a history of slight traumatism. I recall a case at the present moment, which was not under my care, of a child in my neighborhood, who died of what a number of competent physicians termed idiopathic peritonitis. My wife, who was interested in the little one, was discussing the case with me one evening, and, upon my expressing my belief that the child must have been injured in some way, exclaimed, "Now, I remember, the little girl was playing with some of the other children in front of our house a day or so before she was taken sick, and I saw one of the other children push her down. She fell with her stomach across a curb-stone. She got up, cried for a few moments, and then went about her play as if nothing had happened."

The second case, which came under my observation in consultation, was pronounced idiopathic by two competent physicians; but careful inquiry among the playmates of the boy revealed the fact that he had injured himself by jumping from the roof of a shed two days before he became ill. As his mother had forbidden his climbing upon the shed, he had concealed the fact of the injury. This concealment on the part of young children through dread of parental sternness is undoubtedly a frequent cause of obscurity in the etiology of peritonitis.

Still a third case. I was called by Dr. G. W. Reynolds, of Chicago, to see a case of peritonitis from some unknown cause, and found a child of five years of age already *in extremis*. On inquiry, I found that the child had been recently presented, within a few days, with a velocipede, from which he had fallen several times. He had hurt himself slightly, but not severely enough to attract attention on the part of his parents; they, however, remembered several falls.

In this case, as in the preceding, I attributed the peritonitis to concussion of the abdominal contents. I have notes of several other cases of a like character, but will not burden the section with their recital.

The treatment of acute peritonitis is undergoing a pronounced change. Indeed, the transition from narcotic routine bids fair to bring the profession to the opposite extreme. The free administration of laxatives, especially those of a saline character, is now being advocated in some quarters quite strenuously. This is going to the opposite extreme with a vengeance. Once again there seems to be a tendency on the part of the profession towards indiscrimination in the proper selection of cases. Lawson Tait and Greig Smith openly advocate saline cathartics in the treatment of peritonitis of a surgical character. Bantock, however, opposes this. It is not my intention to discuss the merits and demerits of medical treatment, as my paper is already spinning out to an unwarrantable length.

The surgical treatment of peritonitis is, to my mind, the most important consideration in connection with this disease. The trite aphorism that "history repeats itself" is well illustrated in the case of peritonitis. Erasistratus and Soranus, ages ago, several times cut into the peritoneal cavity, in the inguinal region, to evacuate pus accumulated in the abdomen. From this time, however, until 1735, a period of surgical horror of the abdominal cavity existed, surgeons being afraid to touch the peritoneum.

In 1735, Petit (*fls*) advocated operations for peritonitis. In 1737 he operated upon cases of traumatic peritonitis with favorable results. He was followed, in 1748, by Garengéot. Chomel advised operation to permit the escape of effusion after the subsidence of acute symptoms. In 1846, Guérin advised copious irrigation of the peritoneal cavity with warm water in generalized puerperal peritonitis, suggesting the removal of effused fluid by aspiration and the injection of warm water until the liquid returned clear. He advised an operation at the supervention of meteorism. In 1861, Marten\* advised the opening of the abdomen with the knife, especially in peritonitis due to pathological perforations. In 1865, Keith† operated upon an ovarian cyst in a patient suffering

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\* "Surgical Treatment of Peritonitis," *Virchow's Archives*, xx. p. 530.

† *Lancet*, 1865, vol. xi. p. 36.

from acute peritonitis. Recovery followed. In 1876, Keiser\* reported several cases of simple purulent and puerperal peritonitis, in which operation proved successful. Puerperal peritonitis has several times been surgically treated with good results. Traumatic peritonitis has frequently been treated by surgical interference since the modern works of Vincent Bouilly (1883) and Chavasse (1885). Prior to 1887, Lawson Tait had already operated upon nearly fifty cases of peritonitis of all kinds. Since that date he has operated upon many others. He says, distinctly, "Whenever I find myself in the presence of localized or generalized peritonitis, whatever may be the cause, I open the abdomen and treat the peritoneum according to the indications furnished by actual inspection. Peritonitis is, in abdominal affections, a most powerful indication for surgical interference."

It has been shown that a comparatively slight exploratory incision will often suffice to bring about a favorable result.

In concluding the general history of the surgical treatment of peritonitis, I feel safe in asserting that it is a modern procedure which is rapidly gaining favor all over the world.

I will now discuss briefly what appears to me to be the principal arguments in favor of early operative interference in peritonitis, especially in the grave forms of so-called idiopathic peritonitis in children, and in traumatic peritonitis under all circumstances, but more especially where the inflammation is generalized or has resulted in the local accumulation of pus. An important point in considering the question of surgical treatment of peritonitis is the analogy of the peritoneal membrane to the pleura and other serous membranes to synovial structures. Inflammations of these tissues are, as is well known, extremely painful and disproportionately depressant. Much of the pain and depression is incidental to distention of the sensitive membrane by the accumulated products of inflammation. How frequently a slight surgical procedure will secure relief from the most intense agony in such conditions! Puncture of the anterior chamber of the eye in serious iritis; puncture of the tunica vaginalis in cases of epididymitis; in-

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\* *Deutsche Arch. f. Klin. Med.*, 1876, xvii. p. 74.



cision of the tunica albuginea in orchitis ; aspiration of the thoracic cavity in effusive pleurisy, are all familiar illustrations of this surgical principle. Relief of tension is the only measure which in such cases will produce rest. The more intimately associated the affected membrane with the sympathetic nervous system and the organs of vegetative life, the more severe the agony and the more pronounced the resulting depression. Applying these principles, as we all do, to inflammation of other structures, why should we not apply them to peritonitis? What membrane of the body is more delicate, more sensitive, more important in its physiological functions, more intimately associated with vital organs, more intimately associated with the lymphatic system, and, most important of all, more intimately associated with the sympathetic ganglia, than is the peritoneum? Taking these things into consideration, is there any wonder that inflammation of so fragile a structure produces such a disproportionate degree of vital depression?

Careful clinical observation has shown us that, *pari passu* with the development of meteorism and distention of the abdomen by fluid products of inflammation, we have a pronounced increase in the depression of the powers of life. Not only does inflammation of the peritoneum *per se* produce reflex inhibition of the cardiac ganglia, but, incidentally to meteorism and effusion, there occurs a direct mechanical interference with the action of the heart. Does it not seem, gentlemen, that the first indication in a case of peritonitis is the relief of pressure and incidentally the removal of gas, fluid, and foreign bodies? So profound is the influence of abdominal distention upon cardiac action that we are apt to be misled in our judgment as to the wisdom of an operation. Many cases that seem too far gone to warrant an operation may recover if the depressing effects of tension upon the peritoneum and abdominal organs and the mechanical interference incidental to meteorism are removed by operation. So simple an operation as aspiration of the intestines will produce an almost immediate relief from pain and a decided and unmistakable improvement in the character of the pulse. I would like to ask the members of this Section whether there is, in their

estimation, any possible objection to operation in cases of peritonitis. The indications for the operation are plain; contraindications are *nil*. Should we hesitate to interfere with the peritoneum, which can under any circumstances be interfered with providing we can prevent inflammation and sepsis? Should we hesitate, I ask, when inflammation is already present and the conditions for sepsis already exist, and when, moreover, the only possible way to avoid sepsis is to remove the products of inflammation or such foreign materials as may be responsible for the condition present? I do not believe that judicious operation will in any case lessen the prospect of recovery. I believe, further, that delay in every case enhances the danger to the patient. In operating, especially in children, it is best to be conservative. It is possible to evacuate purulent and gaseous matters without superadding to the shock of the peritonitis that of an extensive operation. A small exploratory incision, with a flushing out of the peritoneal cavity, and a thorough washing of the matted coils of intestine with warm water, either plain, slightly saline, or impregnated with boracic acid, will, in my estimation, relieve tension, favor asepsis, and save life in many cases. While the operation should be done early where practicable, it is my belief that there are few cases in which the operation is not indicated, providing the patient is not already *in articulo mortis*.

Since becoming converted to this view my experience has been limited to a single case, which I will briefly recount.

CASE I.—This was the case of a girl, seven years of age, who fell against a table, injuring the abdomen slightly. She made very little complaint, and it was not supposed that the injury was of any importance. On the fourth day peritonitis developed and ran a very rapid course. The child, however, was strong and vigorous, and, although considerably prostrated, the case seemed an exceptionally favorable one for surgical interference. On the third day I proposed operation, which was consented to. I opened the abdomen in the median line by a small exploratory incision two and a half inches in length, punctured the intestine with an exploring needle at all accessible points, and flushed out the abdominal cavity with warm

water containing a small amount of boracic acid. I inserted a small drainage-tube, stitched the incision about it, and dressed the wound antiseptically. The operation of flushing was repeated on three successive days, after which time the drainage-tube was removed, and the wound allowed to heal, which it did perfectly. Relief from the operation was immediate, and the suffering of the patient was at no time thereafter severe. After the operation a full half-ounce of Epsom salts was administered, which resulted in very profuse catharsis. I could see no possible objection to this procedure, and I think that the recovery of the patient was in a measure attributable to it. It certainly appears to me logical to apply, where possible, the principle of depletion to inflammations of the peritoneum. This is best secured by salines. I do not, however, wish to be understood as advocating the saline treatment as a routine measure.

In conclusion I will formulate my views of acute peritonitis as follows :

1. I do not believe in the existence of acute idiopathic primary peritonitis.

2. The majority of cases of so-called idiopathic peritonitis in children will be found upon careful inquiry to be traumatic.

3. Slight injuries of the abdominal contents are relatively more dangerous in children than in adults.

4. Acute peritonitis in children, while apparently idiopathic, is often secondary to perityphlitic inflammation, which runs a rapid course and extends to the general peritoneum without the intervention of appreciable local changes.

5. The profound prostration and cardiac inhibition characteristic of peritonitis are in a great measure incidental (1) to tension of the peritoneum produced by inflammatory products, with a consequent reflex inhibition of the heart, and (2) to mechanical interference with the heart's action.

6. Surgical interference is indicated in all severe cases of general peritonitis and in cases of localized suppurative inflammation, or in cases of perityphlitic origin, whether due to foreign bodies or not.

7. There is every indication present for operation, and no



logical objection to it. The operation is almost invariably palliative, if not curative.

8. Operation in no sense impairs the chances of recovery. *Per contra*, it enhances them to a great degree.

9. No case should be allowed to die without operation, unless already *in articulo mortis*.

10. It is not necessary to make a large incision, excepting in cases in which perityphlitic abscess is known to exist, which is rarely the case in children. If perityphlitic abscess exist, and is recognized before operation, the incision should be made at the most favorable point, which, in the majority of cases, is the typical line for ligation of the common iliac, as pointed out by Murphy and Lee. In by far the majority of cases in children a simple exploratory incision with flushing of the abdominal cavity is sufficient.

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## THE THERAPEUTIC VALUE OF ANTIPYRIN IN SOME DISEASES OF CHILDREN.\*

BY S. HENRY DESSAU, M.D.,

Physician for Diseases of Children, Out-Door Department, Mt. Sinai Hospital,  
New York, N. Y.

THE daily experience of the medical practitioner demonstrates the truth that no class of remedies of recent introduction has proved of so much value and interest to him as that of which antipyrin is the type. Especially is this statement applicable to the diseases of infancy and childhood.

Originally introduced, as its name implies, as an antipyretic, antipyrin has in practice developed equal, if not more important, properties as a neurotic remedy. How this latter action is accomplished, or upon what theory the *modus operandi* is explained, has not yet been determined. Empirical observations have nevertheless established the fact that antipyrin and

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\* Read before the Section on Diseases of Children, American Medical Association, Nashville, May 21, 1890.

its congeners are among the most valuable and reliable nerve sedatives that we now have at our disposal.

In considering the therapeutic value of antipyrin in the diseases of children, it is not my intention to discuss the entire field to which its virtues may be applicable, but to present to the attention of the medical profession only certain diseases in which my experience has shown decided results favorable to this remedy. In this, I am pleased to find my observations confirmed, in numerous instances, by many others.

The only disease affecting children in which I employ antipyrin as an antipyretic is pneumonia; either the croupous or the catarrhal form. And even here I seldom resort to it, unless the temperature runs above  $104^{\circ}$  F., near the onset of the attack, inducing symptoms of nervous irritation, indicating a tendency to convulsive seizures.

The high temperature of pneumonia, whether in adults or children, is generally regarded as a dangerous element of the disease, on account of its supposed tendency to cause heart-failure from granular degeneration of the cardiac muscular fibre. This view may be correct as applied to a continued fever, as typhoid for example, but heart-failure in pneumonia is more rationally explained, in my opinion, by the continued strain produced from overcrowding and sudden dilatation of the right heart, the result of engorgement of the pulmonary circulation, when the area of lung involved in the inflammatory process is extensive. This condition is best relieved by other means than antipyretics. The chief danger of high temperature in the pneumonias of children, in my estimation, is the production of an attack of convulsions, due to cerebral congestion; this latter condition being due to the poorly oxygenated state of the blood, thereby offering a highly susceptible condition for the convulsive seizure, through the effect of the fever.

It must not be overlooked that pneumonia is a self-limited disease, unless of the disseminated catarrhal form in children, and the less active interference with its natural course is employed the better will be the results. Antipyrin, besides its antipyretic action, will allay nervous disturbance when not given too freely, and this point is of prime importance. I

administer two and a half to five grains dissolved in water or suspended in syrup,—repeated every hour for four doses,—once in the twenty-four hours. I prefer if possible to give it towards evening, so as to secure sleep, which commonly follows as a result of its sedative action. Occasionally it may occur that the little patient is asleep before the time for the third or fourth dose has arrived. In such a case the entire dose is not given, as the sleep is ordered to be undisturbed.

I have never seen any but the very best results follow the use of antipyrin in the pneumonias of children when administered in the manner I have mentioned.

But my most marked success with antipyrin has been in the treatment of chorea. About one year ago my attention was directed to its employment in this disease, on learning of its use by Dr. Horatio C. Wood in his clinic at the University of Pennsylvania Hospital. Chapin, in an article on Chorea in the *International Medical Annual* for 1889, reports a case presented at the above-named clinic, in which one week's treatment by antipyrin produced quiet after the case had just previously been for three weeks under the arsenic treatment without benefit.

My own experience in the treatment of one case of chorea in my clinic at the out-door department of Mt. Sinai Hospital is fully corroborative of Dr. Wood's case. A girl, twelve years of age, who had chorea with rheumatic symptoms, was treated for two months with arsenic and bromide of potassium, the arsenic being gradually increased in dose until she was taking seven and a half drops of Fowler's solution with fifteen grains of bromide of potassium three times daily. A part of this time iron and digitalis were also administered for a cardiac complication. The choreic movements, which were of the minor form, not improving, antipyrin in ten-grain doses, repeated three times daily, was given, and in four weeks all choreic movements had ceased.

This treatment for chorea has been used by me thus far in seven cases, two being still under treatment, with improvement. Of these seven cases, one was cured in one week, two in three weeks, the one above related in four weeks, and one, the severest of all, in six weeks. The last was a case in a



girl nine years of age, caused by chagrin at not receiving promotion in school, and was first seen on the fourth day of the attack, when the excursions were extensive and severe. Antipyrin in doses of seven and a half grains four times daily was ordered. At the end of the first week of treatment the movements were much quieter, although in the meanwhile they had been more severe than when first seen. About the tenth day of treatment an extensive urticarious eruption of a coppery color, unattended with itching, appeared over the face and body, and, in consequence, the number of doses was reduced to three daily. In two weeks the eruption had entirely disappeared. Complete cure was effected in six weeks. No other ill effects from the antipyrin, than the eruption, were manifested.

When we reflect that, according to the report of the collective investigation committee of the British Medical Association on chorea, which report was prepared by Dr. Stephen Mackenzie (*British Med. Jour.*, 1887), and is based upon the returns of four hundred and thirty-nine cases, the results of drug treatment, the favorite remedies being arsenic and iron, showed an average duration for the disease of ten weeks, the same duration being shown with non-drug treatment (that is, hygienic and dietetic measures only), I think we are warranted in granting a foremost place to antipyrin in the management of chorea. The average duration for the disease in my own cases was only four weeks.

Nineteen cases of chorea, two of which were very severe, have been treated with antipyrin by Dr. Jean Bouisson, of Lyon, France (*Lyon Médicale*, February 9, 1890). Eleven of these were completely cured and six greatly improved. The duration of the disease is not mentioned.

The close relationship of chorea to articular rheumatism in a large proportion of cases, as shown by the observations of Sturges (*Archiv. Pæd.*, 1887), based upon an analysis of one hundred and seventy-seven cases, may to a certain extent explain the *rationale* of the beneficial action of antipyrin in chorea. Sturges concludes that chorea is only another manifestation of the same morbid condition as articular rheumatism, especially relating to the period of childhood. Other careful

observers regard the rheumatic disposition as influencing fully one-third the cases of chorea, a smaller percentage being known as fright-chorea, due to emotional disturbances.

We must all certainly be acquainted with the fact that antipyrin has already secured firm recognition as a reliable remedy in the treatment of articular rheumatism, and it is most probable that its beneficial action in this disease may be explained on the principle of its antiseptic influence, the poison of articular rheumatism being undoubtedly the product of a fermentation in the stomach, depending upon some specific germ.

It would certainly seem that the antiseptic action of antipyrin is the correct explanation of its favorable effect in pertussis, and it may be interesting to note that it was with this view of the pathological origin of the disease, which was subsequently successfully demonstrated by Affanasieff, that it was originally introduced as a remedy by Sonnenberger.

For the past two years I have depended entirely upon antipyrin as a remedy in pertussis, and so far have seen no reason to change my practice. I have treated forty-five cases of pertussis, two being complicated with a severe degree of catarrhal pneumonia with antipyrin, and all have recovered in a shorter period of time, or the attacks lessened in number and severity, than previous cases under any former plan of treatment. Ordinarily, my plan in a simple case of pertussis is to administer from three and a half to seven and a half grains of antipyrin in syrup of wild cherry and water, three times daily, according to age. Where pneumonia became a complication, the method of administration was changed to that before mentioned in the early part of this paper.

Many practitioners have no doubt met with cases of urticaria that have resisted the time-honored treatment of rhubarb and soda mixture, either alone or combined with bromide of potassium or many other remedies. To such I can confidently recommend the use of antipyrin, given either alone or in the rhubarb and soda mixture, or what is pleasanter, the compound syrup of sarsaparilla. Let it be distinctly understood that I do not refer to ordinary acute attacks of urticaria, that will disappear under restricted diet alone, but to persistent

cases, that will continue in an intermittent manner for months in spite of arsenic and all other known remedies. In such cases I have found antipyrin to act with speedy relief.

Urticaria being a neurosis of the skin, we have here another illustration of the broad field of usefulness antipyrin possesses as a neurotic remedy.

To mention the highly beneficial effect of antipyrin in headaches and neuralgias would be repeating what is now an oft-told tale, but I find in my notes several cases occurring in children that have been relieved promptly, as in adults.

In conclusion, I would express the opinion that antipyrin is the type of the most useful remedy, with the broadest field for action, that has come to our notice since the introduction of chloral and carbolic acid.

47 WEST FIFTY-SIXTH STREET.

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## THE USE OF COMMERCIAL MILK-SUGAR IN INFANT-FEEDING.\*

BY E. F. BRUSH, M.D.,

Mount Vernon, N. Y.

SOME time ago a gentleman came to me, who had been sent by his physician for me to discover, if I could, what the trouble was with the milk which he was feeding his baby. He brought a sample with him: it was very slightly gray in color and the caseine was precipitated in a fine granular deposit, the odor was slightly disagreeable. On inquiry I found the mixture to be that known as the "Meigs Mixture," as recommended by Dr. Rotch, in the article on "Infant-Feeding" in Keating's Cyclopædia. After a thorough investigation as to the milk and cream, I could find nothing wrong with these constituents of the mixture. I then ascertained that he had been using the mixture for some weeks, and that he had not observed the foregoing change before. Then I questioned him as to what new conditions were existing when

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\* Read before the Section on Diseases of Children, American Medical Association, Nashville, May 21, 1890.



this change took place, and I learned that he had just procured a new supply of milk-sugar. "But," he said, "it cannot be that, for I got it where I have always bought it." I told him to go to some other store on his way home and get another supply and try that, and report to me the result. He returned in the afternoon, and told me that the whole trouble had been in the sugar; because, when he went home and used the second lot, the mixture appeared all right, and to assure himself that this was the case, he again mixed a quantity with the first milk-sugar and found the same change taking place in the food-mixture. I have ever since exceedingly regretted my foolish oversight in not securing the troublesome sugar. I thought I could look the matter up in the books and find there what the trouble was, but after diligent search I found that there was practically no literature on this subject. By this time the man had unfortunately thrown away the bad sugar. I have been ever since trying to find out what was in that sugar. It was purchased at a reputable first-class drug-store, and the proprietor, I know, deals only with reputable high-class firms. I could not get a sample from him because he had returned it to his wholesale supplier when his customer made his complaint. Since then I have found that we know very little about this highly recommended constituent in mixtures for the artificial feeding of infants. Hahnemann discovered years ago that the sugar of milk had the least appreciable effect on the human system of any substance he had tried, and hence he recommended it as a vehicle for the administration of medicine. Previous to this its use was very limited and its manufacture was confined to Switzerland. Now, however, with our pepsine powders, tablet triturates, and baby-foods, it has become one of the regular articles of commerce, and its consumption is computed by tons; in short, at every creamery in the country where cheese is manufactured, milk-sugar is one of the by-products, and large quantities are still imported. It is found in the wholesale market in large cobs with a stick running through the centre resembling the barley-sugar of our youth, and also in coarse, irregular crystals resembling somewhat coarse salt, and in the retail stores we find it in the fine powdered condition. The market price last

winter at the time of my inquiry was fourteen to eighteen cents per pound for the crystal cobs, and twelve cents for the powders. No wholesale man of my acquaintance could enlighten me as to this difference. It is well known that milk-sugar is one of the difficult articles to powder properly, and there is considerable waste in the crystal owing to the stick on which it is crystalized. This is not a scientific point, but it is one of the things which I learned during several years of intermittent investigation, and it may be interesting to some people.

One of the faults of physiological chemists is that they make no distinction between a substance existing in a natural condition and the substance eliminated and isolated by chemical means. Thus, the sugar of milk of commerce and the sugar of milk as it exists in that fluid are regarded by the chemist as one and the same thing. Hence the physician has been led into the error of thinking that as the sugar in milk is that designed by nature as the best saccharine nutrient, therefore the isolated sugar must fulfil the same function. This is not the truth. Sugar of milk in that fluid is all assimilated, and the milk-sugar of commerce when added to baby-food is eliminated both by the kidneys and the bowels. This I have demonstrated by numerous experiments. I have never found sugar present in the urine or fæces of babies fed at the breast, but in three cases of infants fed with mixtures containing commercial milk-sugar to the amount of three ounces or more in twenty-four hours (as in the Meigs mixture) I have always found sugar in the urine and fæces, demonstrated by Fehling's test. The fæces I macerate in boiling water, boil the filtrate and refilter, testing the final filtrate. I have never endeavored to ascertain the exact amount of sugar, but the reactions have always been definite and well-marked. To-night I received two cubic centimetres of urine from a baby ten months old, fed on the Meigs mixture, and this tested with Squibb's standard Fehling's solution indicated .025 per cent. of sugar. Therefore, instead of being of value as a nutrient, it must be harmful, to what extent I am not at present prepared to say. A substance that is not broken up in the system, but eliminated without change, if it be not an ab-

solute poison, will produce little if any appreciable immediate effect. Hence Hahnemann was right in his observation as to the effect on the system of administered milk-sugar. Rotch also, in his work on "Infant-Feeding," recommends milk-sugar because it undergoes "fermentation less readily than the ordinary sugar." This statement has been repeated by nearly every one who recommends the sugar of milk as an infant-food. I think this statement of Rotch would be rather against any article of food, because any substance that spoils quickly or responds readily to any of the fermentative changes will also respond quickly to the digestive ferments.

Relating to the fermentation of milk-sugar, I have made the following experiment: I took five test-tubes, and in each placed two drachms of a saturated solution of milk-sugar, each tube containing a solution from a different sample. Into each tube I dropped two drops of brewer's yeast; in twenty-four hours each sample responded to the test for alcohol by chromic acid. With these five tubes I placed at the same time a sixth, containing a solution of cane-sugar of the same strength as that of the milk-sugar solutions; in this solution also I dropped two drops of brewer's yeast. The cane-sugar solution set up active fermentation in five hours. I allowed the six solutions to remain in a living-room with the tubes open for three months. When examined after this length of time, the water had completely evaporated, leaving the tubes dry. The five milk-sugar tubes contained each a large mass of dried mould, and some exhibited crystals of sugar on the side of the tube, while the cane-sugar tube contained very little residuum. I added to each tube two drachms of water, the original amount of fluid, and I found that the cane-sugar had entirely disappeared, while the milk-sugar tubes were each rich in sugar. And now, after three weeks in the second solution, with all its gathered mould and dust, the sugar is still there. So Rotch was right: it will undergo "fermentation less readily" than almost anything fermentable.

Another question that has occurred to me in connection with commercial milk-sugar is, How much sugar does a given quantity of the article purchased really contain? In view of this inquiry, I made it a point at one time to buy five cents'



worth of milk-sugar in every drug-store I came to, and thus I collected many samples. Out of these many samples I selected five and submitted them to the tests prescribed by the United States Pharmacopœia. First, solubility. According to the Pharmacopœia, milk-sugar is soluble in seven parts water at 59° F. Sample No. 1, not completely soluble, after twelve hours a white precipitate surrounded by a black ring at the bottom of the tube; No. 2, slight black precipitate, enough to cause a decided opacity on agitating the solution; No. 4, solution remained slightly opaque and deposits a dark brown precipitate; No. 5, solution perfectly clear, with a few grains of undissolved sugar at the bottom of the tube.

Tests for the presence of cane-sugar according to the Pharmacopœia: "If one part of sugar of milk be sprinkled upon five parts of sulphuric acid contained in a flat-bottomed capsule, the acid should acquire nothing more than a greenish or reddish, but no brown nor brownish black, color within an hour." The following are the results of my application of this test, from portions of the samples above referred to: No. 1, blackish brown; No. 2, dark brown; No. 3, reddish brown; No. 4, light red; No. 5, light red. The Pharmacopœia also states that it is insoluble in alcohol, ether, or chloroform. I found sample No. 1 lost five grains from three and three-eighths drachms by repeated washing with sulphuric ether, and eleven grains by washing with absolute alcohol. No. 3 lost half a grain by washing with sulphuric ether. I did not test the other solution in this manner, but I sent to James H. Stebbins, Jr., an analytical chemist residing in New York, samples No. 1 and 2 of the foregoing for analysis as to the quantity of sugar contained in each sample. I received from him the following reply:

"DEAR SIR,—The samples of milk-sugar marked as below submitted to me for analysis contain—

No. 1.....	94.88 per cent.
No. 2.....	98.49 per cent."

These are specimens bought in the open market from reputable druggists and such as are sold to the consumers for infant-feeding. When we come to know the manner in which

milk-sugar is procured, the only wonder is that it does not contain much less sugar than is indicated by the above analysis. The milk is collected and allowed to stand for several hours in cooling vats; then it is conveyed to a large tank to be coagulated. Various substances are used to hasten the coagulation. According to Flint,\* vinegar, cream of tartar, muriatic acid, and sour milk can be used to produce coagulation, but of course rennet is the popular and most commonly-used agent. This, as we all know, is the fourth stomach of the calf. The directions given for preparing rennet are as follows: "Care must be taken not to use too much water in cleaning; wiping lightly with a moistened cloth until it is clean is the better way. If then blown up like a bladder and hung up and dried, it will retain its power for coagulating milk for years." Pieces of this rennet are steeped in warm water and the solution from it is added to the milk, and then the milk is raised to a temperature above 100°, and kept at that until coagulation takes place. Then the whey is drawn off, and this whey is evaporated by boiling to one-fifteenth of its original bulk, leaving a brown, viscid, sweetish saline mass. This is dipped out into a tub, where the sugar will crystallize in twenty-four to forty-eight hours. These crystals are known as "sand;" this sand is piled onto racks, from which the water drains off. The sand is again boiled in water to a sufficient concentration, and the sugar is allowed to crystallize in sticks. It will thus be seen that many of the other crystallizable bodies contained in milk would be included in this crystallization as well as the alkaloids of ptomaines.

I am exceedingly sorry that I have not had time to follow out all the experiments that have been indicated to me while making the few hurried inquiries relating to a subject which I am positively sure will change the views of many gentlemen who have taken me to task for recommending the use of pure cane-sugar as an addition to infant-food when a sugar addition is needed. I really think that the addition of any sugar to good milk is overestimated.

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\* Milk Cows and Dairy Farming.

## MINUTES

OF THE

### SECOND ANNUAL MEETING

OF THE

## AMERICAN PEDIATRIC SOCIETY,

HELD IN NEW YORK CITY, JUNE 3 AND 4, 1890.

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*June 3, 1890.—First Day, Morning Session.*

THE President, J. Lewis Smith, M.D., of New York, called the meeting to order at 11.30 o'clock, in the Mott Memorial Hall, Madison Avenue and Twenty-seventh Street.

The following members were present:

C. E. Billington, New York; A. D. Blackader, Montreal; W. D. Booker, Baltimore; Dillon Brown, A. Caillé, W. L. Carr, H. D. Chapin, John Dorning, New York; Charles Warrington Earle, Chicago; J. H. Fruitnight, L. Emmett Holt, Francis Huber, New York; Henry Jackson, Boston; A. Jacobi, Henry Koplik, New York; H. Lafleur, Baltimore; W. P. Northrup, Joseph O'Dwyer, John J. Reid, New York; T. M. Rotch, Boston; B. Scharlau, August Seibert, J. Lewis Smith, New York; Charles W. Townsend, Boston; V. C. Vaughan, Ann Arbor; William Perry Watson, Jersey City; J. E. Winters, New York.

On motion, the minutes of the last annual meeting were approved as published.

On motion, it was ordered that all the papers presented to this meeting, with the discussions thereon, be furnished exclusively to the ARCHIVES OF PEDIATRICS for publication therein; the publishers in turn agreeing to make three hundred reprints thereof for the society free of all expense, and similar to those furnished at the last meeting.



Dr. J. Lewis Smith then delivered his annual address.

Dr. T. M. Rotch then read a paper on "Management of Human Breast-Milk in Cases of Difficult Infantile Digestion," which was discussed by Drs. Jacobi, Holt, Fruitnight, and Blackader.

Dr. Francis Huber then read a paper (with presentation of case) on "Spurious Meningocele."

Dr. W. P. Northrup then read a paper entitled "On what Early Symptoms may we base a Diagnosis of Tubercular Meningitis?"

The time for adjournment having arrived, it was moved and carried that the discussion on Dr. Northrup's paper be postponed until the afternoon session.

*First Day.—Afternoon Session.*

Society called to order by President Smith at 3.30 o'clock.

Dr. Northrup's paper was then discussed by Drs. Earle, Rotch, Jacobi, Winters, Caillé, Fruitnight, Watson, and the President.

Dr. Carr then read a paper on "Some Manifestations of Rachitis not always associated with Severe Bone Changes."

Dr. Jackson then read a paper on "A Fatal Case of Purpura Hæmorrhagica," which was discussed by Drs. Earle, Booker, Jacobi, Rotch, Koplik, Fruitnight, and the President.

Adjournment.

*First Day.—Evening Session.*

Society called to order by President Smith at 8 o'clock.

Dr. Brown read a paper on the "Technique of Intubation, with a Report of Three Hundred and Fifty Cases," which was discussed by Drs. Earle and Caillé.

Dr. Holt then read a paper on "Some Observations on the Stomach Capacity of Infants" (with specimens), which was discussed by Drs. Rotch, Seibert, Earle, and Jacobi.

Dr. Earle then read a paper on "Simple but Efficient Medication in Pediatrics," which was discussed by Drs. Carr, Holt, Seibert, Koplik, and Fruitnight.

The general discussion on the "Use of Alcohol in the Treatment of the Diseases of Children" was then opened by

Drs. Seibert and Winters, and continued by Drs. Jacobi, the President, Chapin, Vaughan, Rotch, Holt, and Fruitnight.

The following papers were then read by title :

"A Case of Purulent Peritonitis," by Dr. Reid ; "A Case of Sarcoma of the Kidney" (by invitation), by F. M. Warner, M.D., of New York.

On motion, a committee, composed of Drs. Booker and Winters, was appointed to consider the recommendations in the President's address and report upon the same at the executive meeting.

Adjournment.

*June 4, 1890.—Second Day.—Morning Session.*

Society called to order by the President at 11.30 o'clock.

The Council reported the following nominations to office and membership, and, on motion, it was resolved that the report be accepted and the nominations confirmed.

*President.*—T. M. Rotch, M.D., Boston.

*First Vice-President.*—V. C. Vaughan, M.D., Ann Arbor.

*Second Vice-President.*—Joseph O'Dwyer, M.D., New York.

*Secretary.*—W. D. Booker, M.D., Baltimore.

*Recorder.*—William Perry Watson, M.D., Jersey City.

*Treasurer.*—Charles Warrington Earle, M.D., Chicago.

COUNCIL.

T. S. Latimer, M.D., Baltimore ; J. M. Keating, M.D., Philadelphia ; I. N. Love, M.D., St. Louis, C. P. Putnam, M.D., Boston ; A. D. Blackader, M.D., Montreal ; L. Emmett Holt, M.D., New York ; W. P. Northrup, M.D., New York.

BUSINESS COMMITTEE OF THE COUNCIL.

L. E. Holt, *chairman* ; A. D. Blackader, W. P. Northrup.

NEW MEMBERS.

M. P. Hatfield, M.D., Chicago ; W. S. Christopher, M.D., Cincinnati ; Jerome Walker, M.D., Brooklyn ; and O. P. Rex, M.D., Philadelphia.

The following amendments to the Constitution, proposed at

the last annual meeting, were adopted, viz.: To Article XIV., after paragraph 3, "Should any paper be too long to be read in twenty minutes, the writer must prepare an abstract which can be read within that time." To Article XIV., in paragraph 5, insert after the word Council, "two months before the annual meeting." After paragraph 5, Article XIV., "Members who have papers to present to the Society at the regular annual meeting shall furnish an abstract to the Council six weeks before the meeting for distribution to members." To Article X. insert at end, "All papers presented shall become the property of the Society." Instead of Article V., the following: "Each member shall pay an annual fee, the amount of which shall be decided upon at each annual meeting. Honorary members shall be exempted from fees."

The committee to consider the recommendations in the President's address reported favorably upon the following:

1. The next meeting of the Society shall be held in September, 1891.

2. The subjects for discussion must be selected by the Council, and notice of the same sent to members of the Society six months before the regular annual meeting.

3. The final programme must be sent to members of the Society two months before the annual meeting.

All of which was concurred in by the Society.

The recommendation that South America, Mexico, and the West Indies be embraced within the limits for active membership was not concurred in by the Society.

Drs. A. Jacobi, J. O'Dwyer, A. Seibert, W. P. Northrup, and A. Caillé were elected delegates to the Tenth International Medical Congress.

The proposals for membership were referred to the Council.

Dr. Townsend then read a paper on "Summer Diarrhoea of Infants."

Dr. Vaughan then read a paper on "Contribution to the Chemical Study of the Summer Diarrhoeas of Infancy."

Dr. F. M. Crandall, of New York (by invitation), then read a paper on "Some Points in the Etiology and Treatment of the Diarrhoeal Diseases of Infancy."

Dr. Chapin read a paper on the sterilization of milk.



These papers were declared by the President to be open for discussion, which was participated in by Drs. Booker, Fruitnight, Holt, and Blackader.

Adjournment.

*Second Day.—Afternoon Session.*

Society called to order by President Smith at 3.30 o'clock.

Dr. Townsend read a paper on "A Case of Congenital Influenza." Discussed by Drs. Blackader, Northrup, Fruitnight, Holt, Dorning, Jacobi, and the President.

Dr. Dorning then read a paper on "Congenital Cardiac Disease" (with specimen).

Dr. Jacobi then presented a case of cretinism (modern), with remarks.

Dr. Koplik then read a paper on "Etiology of Empyema in Children," and Dr. Fruitnight read a paper (with presentation of patient) on "A Case of Empyema with Expectoration of Pus: Thoracocentesis," which were discussed by Drs. Scharlau, Carr, Booker, and Shaw.

The subject for general discussion, "How to prevent Diphtheria and Scarlet Fever," was then opened,—“Diphtheria” by Dr. Caillé, and “Scarlet Fever” by the President, and the discussion was continued by Drs. Billington and Earle.

The following papers were read by title:

"Dactylitis in Children" (by invitation), by L. S. Rau, M.D., New York; "A Case of Dextro-Cardia with Rudimentary Lung," by Dr. Jacobi.

On motion, a vote of thanks was extended to the President for his efforts in behalf of the successful meeting now closing.

On motion of Dr. Earle, the thanks of the visiting members were extended to the local members for the hospitable manner in which they had been entertained.

On motion, the Society adjourned subject to the call of the Council.

## THE PRESIDENT'S ADDRESS.

BY J. LEWIS SMITH, M.D.,

New York.

SPEAKING in behalf of its New York members, I welcome the American Pediatric Society to this city. It is a cause of thankfulness that our number since we last convened is unbroken by death. I congratulate the Society on the great interest manifested by its members in the work of the Society, and the determination exhibited to make this one of the most useful and foremost scientific bodies in America. Indeed, my only embarrassment arises from the large number of excellent papers which have been presented, which should be read and discussed during the two days of our sessions, and the consciousness that in the limited time allowed justice cannot be done to their merits.

The year which has passed since we last met has been one of great activity and marked increase of interest in the study of diseases of children, and a glance at the literature which it has furnished will show that members of our Society have been among the foremost in instructing the profession in a correct knowledge of the maladies of early life, and in inculcating new and improved modes of treatment. The "Cyclopædia of the Diseases of Children," the production of which ten years ago would have been impossible, and which will be an invaluable boon, a most important educator, to the profession wherever the English language is spoken, will remain when the present generation has passed away, a monument to the untiring industry, good judgment, and profound knowledge of one of our members. The year that has passed has also witnessed the extension and proper appreciation, not only in our country but throughout Europe, of intubation, which, originating with one of our members, has proved to be one of the most important contributions to the surgical or mechanical treatment of diseases of the present century. Its remarkable simplicity, and the quick relief which it gives in all forms of laryngeal stenosis, commend it to the profession wherever it has been practised.

Some of our members are deterred from active participation in the present sessions of the Society in consequence of their relations to the Section of Diseases of Children of the American Medical Association, which has claimed and received all the time that they were able to bestow, and such papers on pediatric subjects as they were able to furnish. The near approach also of the Tenth International Medical Congress, with its important Section of Diseases of Children, has deprived us of certain valuable papers. But every society whose object is to promote a more accurate knowledge of the diseases of children, and a better mode of treatment, should have the sympathy, and so far as possible the assistance, of the members of our Society, for it matters little through what channel any important discovery or fact relating to pediatrics becomes known to the profession.

Now that the American Pediatric Society has reached the second year of its existence, and its continuance is assured, it is proper to consider in what way it can most efficiently and successfully accomplish the purpose for which it was organized,—to wit, as expressed at its first meeting, “The scientific study of the diseases of children.” We have stated that the times are auspicious. Only a few years ago the diseases of children were ignored in the curriculum of instruction in the colleges; no medical journal devoted to pediatrics existed in this country, and no department of pediatrics in any of the journals; no society or section of a society made the study of diseases of children its object. Now all these aids or agencies exist to promote advancement in pediatrics. What part shall this Society take in the work of the future? There is no reason why, with the well-known ability and industry of its members, with the abundant opportunity for the study of diseases of children afforded by the college clinics, the asylums, and dispensaries, with the medical journals in all our cities ready to publish our papers and proceedings, and with a most able and successful monthly devoted to pediatrics, conducted by one of our members,—there is no reason why this Society should not take the lead in the achievements of the future.

In my opinion, this Society should remain entirely distinct from any other medical organization, should have its own



separate times for holding its meetings, and the contributions to medical literature which it will make should be entirely distinct from those of any other society, whatever may be the merits of the latter. I have seen, as president of the Pediatric Section of the Ninth International Medical Congress, valuable papers by such men as Bouchut, Moncorvo, Jules Simon, Baginsky, and Oscar Wyss, published in cumbersome and unwieldy volumes with the material of other sections, lost sight of, neither the papers nor a *résumé* of their contents coming to the knowledge of the profession generally. Let our Society exist without affiliation or coalition with any other society, so that its papers and proceedings will be published in small and portable volumes, which we can carry with us when attending to professional engagements and read at our leisure.

It seems to me that our organization should have a wider membership; should be American, as its name indicates. Let us invite to membership and co-operation distinguished physicians of Mexico, the West Indies, and the South American States. When acting as president of the Section of Diseases of Children of the Ninth International Medical Congress, and soliciting papers from all parts of the world, the first to arrive were three from South America, sent by Moncorvo, of Brazil. I believe, from my knowledge of him, that he would furnish a paper for each meeting of the Society, giving the results of his observations in that distant country, and that he would aid in the selection of suitable physicians for membership in the South American States. The recent Pan-American Alliance will soon facilitate intercourse between North and South America, and bring the medical profession of the two continents into closer relation, so that the suggestion which I make seems to me feasible. The correspondence which I have had with members of the Society in preparing for the annual meeting induces me to make the following suggestions: First, that the sessions of this Society hereafter be in the autumn, as, for instance, in the third week in September. The members of the Society are for the most part busy practitioners, but many of them take a summer vacation, during the leisure of which they will have more time to prepare papers to be read

before the Society than they could possibly have during the winter and spring months. Moreover, this year some of our members, who so far as professional engagements are concerned might attend our meetings in the autumn, have found it very inconvenient to be present, on account of the fact that it was necessary that they should attend the meetings of other important medical societies that have recently convened. An autumnal meeting of our Society will, I think, conflict but little with the claims of other societies.

I suggest also that hereafter the Council announce to the members of the Society the two subjects for discussion required by the by-laws at least six months before the annual meeting, so that there will be ample time for preparation for those who may wish to participate in the discussion. Adequate preparation for the discussion of certain subjects requires experiments, clinical observations, and the collecting of statistics, which, properly performed, might occupy half a year. Members who have desired to participate in the proceedings have complained because the programme did not appear earlier, so that in the future it would be well, in my opinion, to announce the completed programme one month before the annual meeting.

It is evident from the announcement in our programme of so many papers on interesting subjects that there may not be sufficient time for their discussion. This inconvenience was also experienced at the sessions of the Pediatric Section of the Ninth International Medical Congress, and the unusual expedient was resorted to of allowing members who wished to discuss papers, but did not have the opportunity, to send in writing the remarks which they desired to make to the secretary, so that they could be published in the proceedings. It is certainly the wish of all of us that the discussions, as they are presented to the profession in the printed transactions, be creditable to the Society and not inferior in merit to the valuable papers which they will accompany. It will be the duty of the Council, who have prepared so good a programme, to see to it that the discussions as they appear in print be worthy of the subjects which are discussed. It is so important that the proceedings of this Society be of a high order and favorably

received by the profession that I recommend that the precedent, which I have alluded to, furnished by the Pediatric Section of the Ninth International Congress be followed. I recommend that if a member have opinions which seem to him important, or facts which may throw light on a subject under discussion, and do not have time to present them during the discussion, he may have the privilege of sending them, in writing, as briefly expressed as possible, to the secretary, and, if the Council approve, they may be published with the proceedings.

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## SPURIOUS MENINGOCELE; TRAUMATIC CEPHALOHYDROCELE; ACQUIRED CEPHALOCELE.

BY FRANCIS HUBER, M.D.,

New York.

OSLER, who has carefully studied one hundred and fifty cases of cerebral palsies of children, one hundred and twenty of this number being hemiplegic, sums up as follows: Infantile hemiplegia is probably the result of a variety of different processes, of which the most important are—

1. Hemorrhage, occurring during violent convulsions or during a paroxysm of whooping-cough.
2. Post-febrile processes: (a) embolic; (b) endo- and peri-arterial changes; and (c) encephalitis.
3. Thrombosis of the cerebral veins.

Of the one hundred and twenty cases of hemiplegia, nine were due to or followed injury with the forceps.

Drs. Peterson and Sachs, who, in their paper, have analyzed one hundred and forty cases, report a much larger proportion following the use of instruments in labor. In the special monograph, relating to cerebral palsies in early life, a greater or less number are accredited to the use of the obstetrical forceps. None of the cases, however, possess the special features of my little patient, and I quote the authorities merely to show



the infrequency of the variety represented by the patient now to be introduced.

The patient, Annie P.,\* about four and a half years old, is apparently a well-developed, healthy, and moderately bright-looking child. Walks with left toe everted and tendency to drag. Whole left lower extremity "swung" somewhat, and smaller than right. Left hand in a state of moderate contracture; forearm slightly flexed and pronated. All passive movements possible, but difficult from muscular resistance. Contracture, principally in the pronators and flexors of forearm and arm. No articular changes. Left corner of mouth lower than right, but right corner may be drawn up and out by distortion of right side of head and face. Left corrugator, orbicularis palpebrarum and oris, and levator anguli oris paretic. Tongue straight (?). Right frontal bone flattened and drawn back and down, stretching up and out the right palpebral fissure, and right wall of orbit. zygoma and masseter crowded down and out, producing quite a deformity in front of and above the right ear. On deep palpation there is found a depressed area, occupying nearly the whole of the right parietal region, apparently depressed to about the depth which the loss of the external table of the skull would produce. At no part does the cranial arch appear to be entirely deficient, except at the anterior border of the depressed area, just to the right of the sagittal, and just behind the coronal suture, where there is a visible and tangible cerebral pulsation synchronous with the heart's beat. A large fluctuating tumor occupies the upper and posterior parietal region, some effusion, however, coming down almost to a level with the upper border of the auricle. This lower patch, two by three-quarters inches, is separated from the upper large area by a narrow bridge of bone, *under* which the two cavities communicate, as shown by transmission of fluctuation from one to the other. The cavity of the fluctuating tumor does not extend over the space where the cerebral pulsation is seen. Pressure over tumor does not produce any cerebral symptoms;

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\* As determined at an examination made in the latter part of September, 1886, in presence of Dr. R. A. Amidon, to whom my thanks are tendered.

over pulsating area pain is caused. Right pupil is perhaps a trifle larger than left; mobile. Whole of right eyeball displaced up and out with wall of orbit. Fundus oculi normal. Vision, as well as can be tested, good in both eyes.

Left limbs smaller than right. Sensibility to touch and pain apparently intact over whole of left side. Tendon reflex of left knee exaggerated.

The child is well behaved, good natured, and does not have any sudden outburst of temper. She performs her functions normally, and is cleanly in her habits. Conducts herself well at the table, eating slowly and moderately.

*Previous history.*—The mother has had six children. The first, second, and third were born without any difficulty. The others, the offspring of a second marriage, necessitated instrumental interference before delivery was accomplished. In the case of our little patient, the head not engaging and no progress being made in the labor, forceps were applied a number of times by the attending physician (now deceased). As they slipped off each time, version was performed, and after considerable difficulty the child was extracted in an asphyxiated condition. The usual methods were then resorted to, and after a time the child began to give evidences of life, commenced to scream, and kept on screaming day and night, so that morphia was given to quiet her.

The caput succedaneum was very large, and instead of diminishing kept on increasing from day to day. Fluctuation distinct in the tumor; no discoloration of skin over it noticed at any time. The appetite remained good; bowels moved regularly; no fever. The effusion continued to increase, and one month after birth the swelling extended from right auditory meatus to the temporal ridge of left side (?), and from the supraorbital ridges back to occiput. The child is bright and lively; functions normal. An indistinct bony ring is felt. As the fluid increased the tumor was aspirated, and about twelve ounces of a yellowish liquid were withdrawn. A distinct bony rim could now be felt. Compression was then employed without any permanent good result, the liquid reaccumulating quite rapidly. No internal medicine.

*April 1.* (Eight months old.)—Tumor is as large as an orange.

Child commences to have convulsive movements in right side of face and slightly so in left hand. Is very restless. Bowels are regular; appetite good.

*April 15.*—Convulsions are severer and more frequent; now involve the face, left hand, and foot.

*May 1.*—Convulsions affect both sides of face and extremities; has now about six attacks in twenty-four hours. Takes sodii iodidum gr. v. t. i. d. and infusion digitalis.

*June 2.*—Convulsions are general; no improvement being noted. Compression of tumor does not cause any cerebral disturbance. Three ounces of serous fluid withdrawn by means of aspirator and compression resorted to over the parts. Medication continued.

*June 15.*—Convulsions same as before tapping; temperature normal.

*July 5.*—Is now suffering from a severe gastro-intestinal catarrh. The tumor is smaller and not so tense.

*August 1.*—Has emaciated a good deal; no convulsions since diarrhoea set in. She squints more. Contractured condition of flexors of left upper and lower extremities. The thumb is turned in and the other fingers are closed over it. When an attempt is made to straighten the joints the child cries. The muscles of right side of face do not contract.

*September 8.*—Bowels still loose, about three passages daily. The tumor appears smaller; the child is very restless and wants to be carried day and night; appears bright and pays attention to everything; voice is clear; hearing good; is very greedy. The iodide and digitalis stopped. Just cut two upper central incisors. The temperature gradually rose from 101° to 104° in four days and then subsided.

*September 15.*—Bright in appearance, but is very cross and cries a great deal; appetite ravenous; no further convulsions; is still nursed; bowels loose; temperature 101°.

*September 25.*—Cries so much that the others cannot sleep; Magendie's solution, gradually increased from one to fifteen drops, then given without producing the desired result; bromide and chloral given with better effect.\*

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\* Prior history condensed from Dr. F. A. Beck's case-book.



It has been my privilege to have seen the case a number of times during its progress. At no time could we cause any cerebral disturbance by pressure upon the tumor; nor was it possible to feel a distinct opening in the base after the sac had been emptied; pulsation never present in the case. The child has been backward in talking; first began to use a few words when two years of age; the command of language is fair; the words are used correctly, but in a hesitating, stammering way. The ravenous appetite continued until she was a little over two years old; now eats moderately and behaves well; only began to walk when nearly four years old; but two convulsive attacks since those referred to above. The seizures were not dependent upon the brain lesion; one was the herald of a severe attack of diphtheria, the local lesions of which were observed in the throat the next day; the second seizure, August, 1889, was occasioned by a very indigestible meal.

For a number of months epileptic attacks, as frequent as six in twenty-four hours, occurred, and medicines seemed to influence them little, if at all. With the onset of a severe gastro-intestinal catarrh, the convulsive seizures ceased, except upon the two occasions referred to. The first preceded an attack of diphtheria, the second was due to excessive indulgence at the table. This feature of the case I shall dismiss with the following quotation from Osler:

“Epilepsy is a distressing symptom for which many of these cases (of cerebral palsies) seek relief. It is well to recognize clearly the cortical nature of the attacks and let the parents know that a cure can rarely be anticipated. It is encouraging, however, to note that the seizures may lessen greatly, and prolonged periods of quiescence are not uncommon.”

The chief interest in the case centres in the tumor situated in the right parietal region. At first the diagnosis of cephalæmatoma, with depression of parietal and frontal bones, was made. In a few days the true nature of the trouble was apparent. If we bear in mind the salient points, we ought not to have much difficulty in arriving at a correct diagnosis. The injury to the head during parturition, the marked flattening and depression of the parietal and frontal bones (particularly of the parietal), the presence of a large fluctuating tumor,

which rapidly refilled after each aspiration, and, finally, the chemical identity of the fluid with cerebro-spinal liquor (as determined by Professor A. Jacobi) lead us to the diagnosis of "simple fracture of right parietal bone with effusion of cerebro-spinal fluid under the pericranium." For reasons evident later on, I may add, to complete the diagnosis, laceration of the meninges and brain, with possibly a communication with right lateral ventricle, and the persistence of a dural fistula. At the time of the injury very probably a hemorrhage and laceration of right motor area took place, followed by atrophy or retarded development of the same; deficient ossification of right coronal suture at point of cerebral pulsation; traumatic left infantile hemiplegia with retarded development, and secondary descending degeneration in spinal cord and contraction; moderate imbecility.

Since the above was written, four and a half years ago, the ossification has been completed. In the light of further studies, I would state positively that the right lateral ventricle has been involved, and, furthermore, that a condition of proencephalus exists.

Through the courtesy of Dr. A. W. Newfield, I am enabled to report a second case, occurring in a child nine months old. The mother, while carrying the child in her arms, fell down a flight of stairs; she herself escaped uninjured; the child, however, struck its head, and a tumor developed in the left parietal and temporal regions. The child was stunned, and upon recovering vomited a number of times. Blood escaped from the mouth and nose, and once or twice blood was vomited. In a few days, with the exception of the tumor (at first thought to be a hæmatoma), the little one apparently had recovered from the accident. About a month later fever set in, the child became drowsy and stupid, and I was then requested to see the case. Upon examination, we discovered a *pulsating* tumor about the size of an English walnut, situated a little above and behind the left ear. A fracture of the parietal bone could be made out distinctly, the fragment being raised by the fluid beneath. It could be readily depressed to its normal position; as soon as the pressure was taken off the fragment would spring up. The fracture began about a quarter of an inch anterior to

PROFESSOR CONNER'S TABLE OF CASES (corrected, etc.).  
Primary Cases (following Simple Fractures).

No.	Reporter.	Authority.	Sex.	Age.	Location of Fracture.	Time of Appearance after Injury.	Operative Treatment.	Result.	Time of Death.	Cause of Death.	Remarks.
1	Marjolin.	Vivien, Thèse de Paris, No. 440, 1883.	M.	16 mos.	Upper and posterior left parietal region.	4 months.	2 tapplings.	Recovery.	.....	.....	Pulsation noticed.
2	Haward.	London Lancet, July 17, 1869.	M.	19 mos.	Right frontal region.	At once.	1 tapping.	Death.	12 days after puncture.	Meningo-encephalitis.	
3	Giraldes.	Mal. Chirurg. des Enfants, 1869, p. 730.	M.	14 mos.	Posterior right parietal region.	A number of days.	2 tapplings, 1 free incision.	Death.	20 days after first tapping.	Meningo-encephalitis.	
4	Potain.	Vivien, op. cit.	F.	7 mos.	Posterior right parietal region.	Unknown.	3 tapplings.	Death.	18 days after first puncture.	Meningo-encephalitis.	
5	Erichsen.	Surgery, Am. ed., 1878, vol. i. p. 534.	.....	Child.	Left side of skull.	Very soon.	2 tapplings.	Death.	10 days after injury.	Meningo-encephalitis.	Hydrocephalic child.
6	Lucas.	Guy's Hosp. Rep., 1876, p. 363.	F.	2 yrs.	Left temporal region.	About 2 weeks.	1 aspiration.	Death.	21 months after injury.	Meningo-encephalitis.	
7	Emory.	Bul. de la Soc. Anat., 1876, p. 36.	.....	2 yrs.	Frontal region.	Unknown.	1 tapping six months after fall, then free incision.	Death.	.....	Meningitis and erysipelas.	
8	Schmitz.	Handbuch der Chir., Billroth and Lücke, L. 30, S. 152.	.....	5 mos.	Lower right parietal region.	10 days.	3 punctures and compression.	Unknown.	.....	.....	Removed from hospital while under treatment; mistaken for hematoma.
9	Weinlechner.	Jahrbuch f. Kinderheilkunde, B. 18, S. 367.	M.	23 mos.	Posterior right occipital region.	Unknown.	2 punctures.	Death.	9 days after second puncture.	Meningitis.	Pulsation noticed; nothing known as to cause; hydrocephalic; communication with lateral ventricle, post-mortem.
10	Weinlechner.	Jahrbuch f. Kinderheilkunde	M.	7 mos.	Right parietal region.	Unknown.	3 punctures with cataract.	Death.	6 days after third	Meningitis.	Cause unknown; fissure present in parietal bone.



11	Billroth.	F.	At birth.	Right parietal region.	Several days after delivery.	5 punctures (2 iodine injections).	Death.	6 days after fifth puncture.	Meningitis.	2½ years old when seen by B.; injury produced by forceps during delivery; p-m. showed communication with right lateral ventricle.
12	Kraussold.	.....	9 mos.	Right occipito-parietal region.	Unknown.	2 punctures.	Recovery.	.....	.....	Case not seen until nine months after injury; pulsation noticed.
13	Reckett.	M.	2½ yrs.	Right temporo-parietal region.	2 or 3 days.	1 aspiration.	Recovery.	.....	.....	Squinting noticed at time of detection of tumor, disappeared after tapping; persistent paraplegia from spinal injury. Pulsation noticed.
14	Lucas.	M.	23 mos.	Left frontal region.	17 days.	1 tapping with hypodermic-needle.	Recovery.	.....	.....	.....
15	Conner.	M.	12½ years.	Right occipito-parieto-temporal region.	At once.	5 punctures, 1 aspiration.	Recovery.	.....	.....	.....
16	Conner.	M.	27 mos.	Right parietal region.	At once.	None.	Recovery.	.....	.....	Child hydrocephalic and rachitic.
17	Huber.	F.	4½ yrs.	Right parietal region.	Soon after birth.	3 aspirations, 1 puncture.	Recovery.	.....	.....	Due to use of forceps; left hemiplegia and contracture, etc.
18	Huber.	.....	9 mos.	Left parietal.	Fall.	.....	Death.	1 month.	Meningitis.	Pulsation.
19	T. Smith.	M.	8 mos.	Right parieto-occipital region.	6 days.	None.	Death.	2 months.	.....	Ill-nourished, neglected, rickets; death in convulsion two days after admission; fall on head from a height.
20	T. Smith.	F.	3 yrs.	Right parieto-occipital region.	Not known.	None.	Alive.	.....	.....	Three years after injury in fairly good health; strumous with diseased knee-joint; pulsation; free communication with interior of skull; fall from a height.
21	R. J. Godlee.	F.	8 mos.	Right parietal region.	Soon after injury.	Aspirated twice, then laid open and drained.	Death.	26th day.	Meningitis.	Fell 1½ feet; pulsation marked when child cried.
22	R. J. Godlee.	M.	5 mos.	Right occipito-temporal region.	.....	.....	.....	.....	.....	Fell 8 feet; impulse upon crying; first case of T. Smith.

*Secondary Cases (following Compound Fractures).*

No.	Reporter.	Authority.	Sex.	Age.	Location of Fracture.	Time of Appearance after Injury.	Operative Treatment.	Result.	Time of Death.	Cause of Death.	Remarks.
a	Lawson.	Trans. Path. Soc. Lond., 1870, p. 311.	M.	13½ years.	Left frontal region.	18 months after trephining.	Opened with lancet-point.	Recovery.	.....	.....	Trephined on account of fracture.
b	Barton.	London Lancet, Feb. 12, 1881.	M.	22 yrs.	Left frontal region.	3 days.	Opening with probe of bullet wound on sixth day.	Recovery.	.....	.....	Pistol wound; pulsation noticed; disappearance of tumor and cessation of discharges in less than one week.
c	Verneuil.	Vivien, op. cit.	M.	52 yrs.	Right frontal region.	10 days after cleavage of scalp wound.	Reopening of wound.	Death.	3½ months.	Abscess in right frontal lobe.	Pistol wound; pulsation noticed.

the lower and posterior portion of the parietal bone, and extended upward about two inches, the base of the fragment being above and about one inch across. At the widest portion of the gap the interval between the fragments was somewhat over half an inch. A well-marked meningitis was present, which caused a fatal result in a few days. Unfortunately, an autopsy could not be obtained.

The literature of the subject is not very extensive. Among the more important contributions may be mentioned an elaborate article by Professor Weinlechner (*Jahrbuch f. Kinderheilkunde*, Bd. xviii. p. 368-387); Professor Conner's report of two cases, and extended remarks (*Amer. Journ. Med. Sciences*, 103-110, vol. lxxxviii.). Lucas (Guy's Hospital Reports, 1876, 1878, 1881) has studied the subject carefully, and reports two cases, in one of which he was able to obtain an autopsy twenty-one months after the injury. In the Reports for 1884, he gives the details and autopsy of a case in which the fluid escaped from the trephine opening fourteen days after operating. The article in the "International System of Surgery" is merely an abstract of Dr. Conner's paper. Erichsen, in his "Surgery," refers to a single case occurring in a hydrocephalic child. Billroth reports one case with an analysis of the fluid. In addition, a few isolated cases are reported, the number of which, since attention has been called to the nature of the trouble, is slowly increasing.\*

Table of cases thus far reported: I have excluded three of the cases found in Dr. Conner's table, namely case 9, 10, and 11; they do not properly belong in the category. Weinlechner, under whose care they were, assigns them to the first class to be referred to later.

To these authorities, Billroth, Lucas, Conner, Weinlechner, Thomas Smith, and Godlee, I am largely indebted for the subject-matter embodied in this paper. As Weinlechner's article has not been translated, to my knowledge, I have taken the liberty to quote him extensively.

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\* Thomas Smith, in *Brit. Hosp. Rep.*, 1884, cites two new cases under his care. R. J. Godlee, in *Trans. Path. Soc.*, London, vol. xxxvi., two cases, one of which is reported by T. Smith, having come under his care shortly before death.



In the exhaustive paper referred to above, Weinlechner recognizes two pathological states or conditions (clinically distinct and readily differentiated) as possible complications of simple fractures of the vault in children. He has found that the fissures in both cases gradually increase in width until a gap results. In the first class the brain is in direct apposition with fractured bone; in the second class a false or spurious meningocele develops.

I shall refer to the first variety in an incidental manner, and confine the discussion to the consideration of the second division. "A discharge of a clear, watery fluid, precisely similar in its character to the watery discharge from the ear and from the nose, may also take place from any part of the vault of the skull, provided the injury extends not only through the integuments and the bones, but also through the cerebral membranes; laying open, in fact, the space between the visceral arachnoid and the pia mater" (Hewett, "*Holmes's System of Surgery*," Am. Ed., 1881, p. 634). Whether a lesion limited to the bone and meninges is sufficient to cause this trouble will be discussed later.

Erichsen says the discharge usually takes place through the ear, but it may occur from the nose. Still more rarely it takes place from a wound in the scalp communicating with the fracture; percolating through this, and so being poured out externally (Am. Ed., 1881, vol. i. 537). Doubts often arise as to the source, nature, and clinical significance of a watery flow coming from the nose or ear after a traumatism of the head.

In injuries to the vault, the explanation is evident at once, the flow can only be due to an escape of the cerebro-spinal liquor.

If the scalp be broken (the fracture consequently being simple) the fluid accumulates under the fascia, and we have the affection termed "Acquired Cephalocele," "Traumatic Cephalohydrocele" by Conner, or "Meningocele Spuria" by Weinlechner and Billroth. In the case of compound fracture, the original scalp-wound closing, a similar collection may form at a subsequent date. The latter is exceptional, however, but three cases having been reported.

A spurious meningocele presents the following features: A

soft, fluctuating tumor of varying size (Billroth's, the largest, attained the dimensions of two fists) is found upon the vault. In some cases it has appeared right after an injury, in others a fortnight had elapsed, and in one case four months passed before its development. The percussion wave is distinct and very thin. The integument, normal in color, may be distended to such a degree as to be translucent. Pressure may cause a diminution in size, with or without resulting cerebral disturbances. Pulsation is absent in the greater number of cases. A distinct bony ridge, similar to that observed in cephalæmatoma, is frequently found. The opening in the bone is not evident in every case; sometimes, indeed, it cannot be made out until the fluid (resembling the cerebro-spinal liquor in color and chemical composition) has been removed, the relaxed condition of the sac then permitting a thorough examination of the bone underneath.

From an analysis and study of his cases, Weinlechner found that the original fissures would gradually increase in width, and eventually form larger gaps or openings.

Accepting this fact, it is inferred that the greater number of so-called congenital apertures are probably not congenital, but rather acquired defects, the result of some traumatic influence, forgotten or perhaps concealed to cover up some act of carelessness on the part of the child's attendant.

The development of a fissure into a gap is due to two factors. First, *absorption* of the roughened edges, which increases the space between the fractured portion to a certain extent. The second and main factor is intracranial pressure.\* When the meninges are intact, the pressure is evenly distributed by the closed unyielding dural sac, and ligamentous or bony union takes place.

The dura mater being implicated, one or two accidents are possible. In one case the torn meninges with more or less of the wounded brain is forced against the fissure, and in consequence of an adhesive inflammation becomes adherent to the vault. The adjacent bone gradually bulges outward; the margins are separated, and the brain, relieved of its membrane,

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\* The suggestion has been made by Bowlby that absorption may be due to injury to the growing centre of one of the cranial bones.

rises up and pulsates distinctly in the interspace. The viscus does not appear above the level of the bone during forced expiration even in the most aggravated cases. The tumor, conical in shape, and usually situated in the parietal region, is produced wholly by the bony deformity, the brain pulsating at the bottom of the crater, forming the apex of the swelling.

In this manner a plausible explanation is offered to account for the production of the first variety, cranial gaps with apposition of the brain.

Secondly, when the dura is injured, the subdural, or, if the pia be involved, the subpial, fluid is poured out through the fissure, and the pericranium (loosely attached in children) is raised. If the latter be torn, the collection takes place under the "galea aponeurotica," the aponeurosis of the occipito frontal muscles.

The fluid effused becomes encysted and forms a spurious meningocele. As the sac is composed of thickened connective tissue only, the new morbid condition must be regarded as a secondary cyst. Hence, to distinguish it from a true meningocele, containing cerebro-spinal fluid and covered by meninges as well, the word false or spurious is prefixed. A rusty, fibrinous deposit, the remains of former hemorrhages, may be observed, even after a lapse of years, upon the inner surface, thus clearly establishing the traumatic origin of this rare and interesting affection. In some of the autopsies the dura has been found universally adherent to the edges of the bony orifice, thus leaving a large opening. In others the space was more or less completely closed by membrane, in which one or more smaller fistulous openings still remained. Complete consolidation is very unlikely in any case in which the opening has been large and the subaponeurotic accumulation great (Conner). Free communication is thereby established between the intra- and extracranial cavities, and the rapid reaccumulation of fluid after aspiration is explained.

The bony deformity is not so great when a false meningocele is present, nor is the gap as wide as in the first variety. The pressure from within has to contend with two obstacles, so to speak, and the energy is partly used in forcing out the fluid. Consequently, less strain is put upon the bone, and, therefore, the bony deformity will be correspondingly less.



Weinlechner believes that the size of the tumor depends upon the depth of the injury. The deeper the laceration of the structures within the skull, the larger the quantity of fluid effused. When the lesion involves the lateral ventricle, the flow is very much favored and the tumor attains its greatest dimensions, particularly if the opening be large.

Lucas, of Guy's Hospital, who has studied the subject in a careful manner, says, "When cerebro-spinal fluid escapes through the vault (whether the fracture be simple or compound), the injury has extended to the ventricular cavity." He asserts that there is no post-mortem evidence to prove that a wound of the visceral layer of the arachnoid was sufficient to account for the presence of the fluid. Compound fractures are by no means rare; in many instances in which the dura and brain are known to have been injured, no fluid has escaped. On the other hand, in every case in which this complication occurred, and in which a careful autopsy has been possible, a communication with the ventricular cavity has been demonstrated. The light thrown upon this condition by the post-mortem examination in two of his cases (in which the symptoms suggested nothing more serious than a wound of the visceral layer of the arachnoid) clearly establishes his position. In Weinlechner's, Godlee's, and Billroth's cases the ventricular cavity was involved. Prescott Hewett, in his essay in "Holmes's System of Surgery," refers to three cases of compound fractures of the vault with escape of fluid, in which the lateral ventricles were found implicated post mortem. The wound or lesion need not extend so deeply at the outset.

Subsequent to the laceration, Lucas has noticed a softening process to supervene, with an increase in the secretion of the cerebro-spinal fluid from inflammation, so that pressure from within and yielding of the brain wall together contribute to the escape of the fluid from the ventricles.\* Recovery is no argument against this view, for in children, provided menin-

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\* A similar observation was made by Keen in the report of his operation for the removal of a brain tumor (*Amer. Jour. Med. Sci.*, October, 1888). The wall yielded on the ninth day, and gave exit daily to a quantity of cerebro-spinal fluid sufficient to wet an ample sublimate dressing continually for three weeks.

gitis does not set in, the most extensive cerebral laceration may be recovered from without grave symptoms. The non-development of the intellectual faculties in children offers the readiest explanation of the favorable result.

As might be inferred from the remarks made, the primary cases occur in early childhood. Lucas maintains that the elasticity and thinness of children's skulls permit or determine the injury upon which this rare phenomenon depends. In adults the strong and firmly ossified calvarium cannot be driven in to a like extent without an accompanying laceration of the scalp. Hence, similar injuries in the adult are compound, and may be followed by an escape of cerebro-spinal liquor through the wound. Collection beneath the scalp takes place in the adult, when the wound in the soft parts has healed. Conner believes that the closer connection of the meninges and skull is another predisposing element in the production of this accident. The following assumption is put forth by Weinlechner: As the larger number of cases occur prior to the age of sixteen months (during the period when the relative growth of brain is most rapid), cerebral pressure will be correspondingly greater during this early age, and, therefore, he looks upon the factor as the chief determining cause of the complication after a simple fracture has occurred.

The exceptional occurrence, in a boy over twelve years old, Conner considers due to the injury being caused by a comparatively slowly-acting, crowding force of no very great amount. This explanation is hardly satisfactory; it applies equally well in cases of very young children. We find that the accident has followed the use of forceps during parturition, the force in the latter case also acting slowly and compressing the head gradually.

Diagnosis in these cases may be extremely difficult. If the fluctuating tumor be reducible, perhaps pulsate synchronously with the heart, increase in size upon expiration, coughing, or crying, and if a gap can be felt in the bone, or cerebral disturbances ensue when pressure is exerted, then the nature of the case is obvious. On the contrary, if there be no such positive signs, the doubt can only be cleared by a chemical examination of the fluid, as was done in the case of the little patient

before us this evening. "In every case, therefore, where there is a subaponeurotic tumor and a history of head injury, if rapid subsidence of the swelling does not take place, an exploratory aspiration with at least a hypodermic syringe should be made" (Conner). As to the nature of the fluid, I do not think that there can be any reasonable doubt. The chemical identity of the fluid with the cerebro-spinal liquor has been established by such competent observers as Billroth, Lucas, Weinlechner, Conner, and Jacobi.

If the external tumor pulsates, it clearly indicates a communication with the interior of the skull. Our prognosis must be guarded. The parts ought to be protected from any violence. The gravity of the case does not consist in the escape of the cerebro-spinal fluid; large quantities may be lost without any apparent evil result. Hewett refers to a case, reported by Dudley, in which it is computed that not less than two gallons escaped gradually in a comparatively short time, and yet the patient recovered. Of eleven cases of compound fracture, complicated by the escape of cerebro-spinal fluid, eight recovered. The fatal nature of the case is determined not by the loss of fluid, but by the severe lesions, the extravasation of blood, and the laceration of the brain tissue. The severe injury must be regarded as a permanent source of danger, that may at any time determine an attack of acute meningitis. The mind may be more or less affected, and a morbid condition result; the danger to life is great.

The unfortunate experience of pre-antiseptic surgery relegated this variety of injury to the large class of cases in which palliative measures only were allowed, and the treatment in consequence was restricted to the simplest measures. Internal medication is of no avail. If evidence of pressure exist, the fluid may be drawn off by means of a fine aspirating needle, discontinuing the process upon the advent of any untoward symptoms. Pressure may be applied, after the sac has been emptied, by means of adhesive plaster, silk elastic cap, etc. Simple tapping has been followed by a purulent meningitis. Free incision and the introduction of a seton have resulted fatally. Noble Smith's plan of injecting a few drops of Morton's iodo-glycerin fluid into the sac wall at intervals has



yielded excellent results in cases of meningocele, and may, perhaps, give equally good results in the variety now under discussion. A permanent cure may be accomplished by resorting to injections, following the precautions observed in spina bifida. The fatal results consequent upon the second injection of iodine in Billroth's case (though death was imminent from rupture of the sac) teaches us that such operative measures should not be attempted when a communication exists between the sac and the interior of the cranium. Under such conditions the attempt may be made to secure isolation of the tumor by means of graduated constriction or pressure. Antiseptic surgery, with its advances and brilliant achievements in cerebral surgery, may offer more favorable results in the future.

It may be suggested that, as the presence of fluid between the fragments interferes with bony union, its removal may facilitate ossification. Unfortunately, the communication existing in many cases between the exterior and interior of the cranium allows of a rapid reaccumulation and defeats our object. If operative measures are necessary in consequence of a threatened rupture of the sac or other causes, and we are certain that the communication with the interior has been obliterated, the problem is simple. Laying open the sac, dissecting it out or destroying it, and dressing the wound antiseptically will no doubt remove the deformity.

If the opening be patent the problem is more complicated, and under the strictest antisepsis the sac must be opened and the lateral ventricle drained after the skull has been trephined. That this plan is feasible is not at all improbable, for the ventricles have been opened and drained by Von Bergmann, Ayres, Keen, and others. Keen has washed out the cavity with a boric-acid solution, and has laid down admirable rules for the performance of the operation of draining the lateral ventricles. A strict adherence to the teachings of the masters of cerebral surgery may succeed in curing the false meningocele.

As to the cure or amelioration of the mental state and the paralysis? These two questions are pithily disposed of by the following quotations from Osler's lectures on cerebral palsies, etc.: We are "not likely to improve a pure paralysis, due to a hole in the brain, by making the hole bigger." Dr. J. J.

Putnam raises a more serious objection,—viz., “The existence in these long-standing cases of descending degeneration. The paralysis could not be benefited, and only exceptionally can we expect the epilepsy to be relieved.”

In conclusion, I would formulate the following propositions:

1. Simple fractures of the vault in children, involving the membranes and brain, may be attended by one of two possible complications. In the one variety (*a*) we notice a cranial gap with the brain pulsating at the bottom of the opening in direct apposition with the bone. In the second (*b*) a false meningocele forms. The watery tumor may communicate with the interior of the skull, or the opening may close subsequently by bony or membranous union.

2. A false meningocele may be a primary or secondary condition. It is primary when it complicates a simple fracture; secondary, when it occurs after a compound fracture, trephining, or other operation upon the brain.

3. As a primary condition it is peculiar to children; as a secondary state it may occur in childhood or adult life.

4. If pulsation be present or pressure upon the tumor gives rise to intercranial symptoms, the communication with the interior is patent. It must not be forgotten, however, that the opening may be small or several openings exist, and their course run in a tortuous manner, so that pulsation may be absent and pressure will not give rise to intracranial symptoms.

5. The presence of a false meningocele is proof positive that the lateral ventricle has been involved.

6. The tumor may develop at once, or only after the lapse of days, weeks, and even months.

7. The unfavorable results are due to meningitis, encephalitis or lepto-meningitis.

8. The operative measures may be palliative or curative. If the communication with the ventricle has become occluded aspiration may be employed; injection of iodo-glycerin may be used, or the sac may be incised and dissected out or destroyed.

If the opening into the ventricle is still patent, aspiration may be resorted to as a temporary expedient. In case more

radical measures are required, the lateral ventricle may be drained under the strictest antisepsis.

#### DISCUSSION.

DR. FRUITNIGHT.—It appears from the cases recorded that when a meningocele has been present, it has frequently been diagnosticated as a cephalæmatoma. In this confusion of diagnoses a note of warning appears; for, inasmuch as cephalæmatoma occurs not so very infrequently, one would be very apt to make such an error in diagnosis whenever a soft, fluctuating tumor develops under the scalp, unless he bore in mind the possible occurrence of a meningocele. We should therefore be more guarded when such swellings appear, particularly if they show themselves after instrumental deliveries.

In regard to the differential diagnosis of these two conditions it seems to me that the swelling of the hæmatomas is more symmetrically globular than that of the meningocele. Furthermore, I believe that the bony ridge bounding the base of the circumference of the meningocele is more irregular and jagged in outline than that about the circumference of the hæmatoma.



## Clinical Memoranda.

## NEW YORK ACADEMY OF MEDICINE.

## SECTION ON PEDIATRICS.

*Stated Meeting April 10, 1890.*

L. EMMETT HOLT, M.D., *Chairman*; WALTER LESTER CARR, M.D., *Secretary*.

## HYDROCEPHALUS FOLLOWING CEREBRO-SPINAL FEVER.

DR. J. LEWIS SMITH presented the patient, a nursing child, aged ten months, which, until three months ago, was in good health. Then without any assignable cause it suddenly became feverish, fretful, constipated for a time, and after three days was seen by a physician, who made the diagnosis of cerebro-spinal meningitis. Besides the symptoms mentioned, there were some vomiting, sighing respiration, *tache méningitique*, marked hyperæsthesia of the surface, and marked retraction of the head. The fever continued three or four weeks and then gradually abated. Dr. Smith saw the child in consultation when it had been sick a few weeks, and again a few days ago. The fever, the *tache*, the sighing respiration, and other signs of meningitis had disappeared. The pupils were moderately dilated, did not respond quickly to light, and Dr. Pomeroy stated that the arteries were too small, the veins large, and the optic nerve too pallid; the child did not see quite as well as before the sickness. The hearing seemed to be good; the head had enlarged; the anterior fontanel was prominent and tense; the bones widely separated; the parietal bones separated perhaps a third of an inch from each other, and measurements made by the father showed an increase in the circumference of three-quarters of an inch the past three weeks.

The speaker said he had seen at least two other cases of chronic hydrocephalus resulting from cerebro-spinal meningitis. What course should be pursued to prevent the increase of the cerebro-spinal fluid was a question. He had proposed the anointing of the head three, four, or five times a day with

iodide of potassium in lanolin, a drachm to the ounce, and perhaps administer iodide of potassium internally.

Dr. A. Jacobi thought the child showed some signs of rachitis, and, being asked to suggest a course of treatment, said, if necessary, he would change the diet, give some animal food, and prescribe phosphorus, say, one-hundred-and-fiftieth of a grain three times a day.

Dr. Francis Huber read a report of a case of empyema, illustrating a practical point in treatment. (See ARCHIVES OF PEDIATRICS, June, 1890.)

#### URETHRAL CALCULUS: A CASE WITH EXHIBITION OF SPECIMEN.

Dr. F. M. Crandall presented the specimen, consisting of a calculus four by two and a half lines in diameter, which he had removed from the urethra of a boy aged three, situated a quarter of an inch from the meatus. The only symptom attributable, apparently, to the calculus was severe tenesmus during defecation following the administration of castor oil by the mother on one occasion; formerly there had been straining at the rectum. The calculus was removed by forceps.

#### CALCULUS TAKEN FROM THE KIDNEY AT AUTOPSY IN A CHILD AGED TWENTY MONTHS.

Dr. I. H. Hance presented a calculus, removed at autopsy, from the pelvis of the kidney of a child which had died, aged twenty months, of pulmonary tuberculosis and whooping-cough. There was no pyelitis; no symptoms of renal calculus during life. The specimen was of interest because of the early age at which it had developed and its size.

#### MALFORMATION OF THE FINGERS IN AN INFANT.

Dr. W. L. Carr presented photographs of a case of congenital malformation of the fingers. Variations in length and constriction bands were apparent.

#### TWO CASES OF PNEUMONIA WITH LOW TEMPERATURE AND SOME OTHER OBSCURE SYMPTOMS.

Dr. L. Emmett Holt, chairman of the Section, read the paper of which the following is an abstract:

The first case occurred in a child five weeks old, whose parents gave a history, on admission of the child to the Babies' Hospital, of a slight dyspeptic diarrhoea for four or five days.

The infant exhibited no signs of serious illness on admission, did not cough, and the temperature was only  $101^{\circ}$ .

On the following day the temperature remained at  $99^{\circ}$  all day. In the morning three drops of paregoric were administered, and within a few hours the child passed into a condition of extreme prostration and slight cyanosis, with which it was thought the opium might have had something to do, as the pupils were tightly contracted. There were no distinctive symptoms pointing to the lungs as the seat of disease, and an examination of the chest showed only very rude breathing upon both sides.

In spite of very free stimulation, both local and general, the child died about twenty-four hours from the supervention of acute severe symptoms.

The autopsy, made thirty hours after death, showed an extensive recent broncho-pneumonia; three-fourths of the right lower lobe and about one-fourth of the upper lobe were consolidated. There was general bronchitis. Microscopical examination was made of the lung, to exclude any possibility of the condition being due to pulmonary collapse. The lesions found were those of typical broncho-pneumonia, the air-vesicles being everywhere filled with round cells, and in many places there were also extensive capillary hemorrhages. The connection of the symptoms with the dose of paregoric was evidently only an accidental one.

The second case occurred in a plump, healthy-looking infant, five months old, who presented, on admission to the hospital, all the symptoms of extreme prostration. He was stated to have had a slight cough for a week, but no severe symptoms until the morning of the day on which he was brought to the hospital. There had been a discharge from the right ear for two days.

The boy was quite drowsy; the head was thrown back; neck somewhat rigid; but pupils normal, and no paralysis could be made out.

On the following morning the temperature was  $99^{\circ}$  F., rectal; respiration, 44; pulse, 132, and weak. There was general relaxation and pallor, but no cyanosis. The only physical signs were very rude breathing, with a few coarse râles at the base of each lung. The breathing was so superficial that the examination was not very satisfactory.

In the evening the rectal temperature was  $96^{\circ}$  F., and all the signs of collapse were present. He died thirty hours after admission and forty-eight hours after severe symptoms came on.

The autopsy showed very extensive broncho-pneumonia in



both lungs. In the right lung were several small areas of gangrene. In the vessels leading to these regions firm thrombi were found. There were also old thrombi in the heart on both sides, that from the right ventricle extending some distance into the pulmonary artery. It was decolorized and quite adherent.

These lungs were also examined microscopically, and the diagnosis of broncho-pneumonia established.

The speaker called attention to the very great frequency of acute pneumonia in young infants, often with very obscure symptoms, as in the cases reported, when almost all the usual symptoms of pulmonary inflammation were wanting.

#### DISCUSSION ON DR. HOLT'S PAPER.

Dr. Chapin inquired whether these cases might not have been cases of pneumonia of long standing. He had within a few weeks seen three cases of babies brought to the hospital wards for treatment without a high temperature, examination of the lungs negative, yet the autopsy showed extensive pulmonary infiltration. In one the whole of the lower lobe of both lungs was involved. He had seen a great many cases of gastro-intestinal disturbance in which pneumonia developed towards the end, causing death, not showing high temperature.

Dr. Jacobi thought the appearances in Dr. Holt's case pointed to a pneumonia of recent date, and Dr. Holt said the pleurisy had probably started within twenty-four hours.

Dr. Jacobi went on to say that there were three classes of cases in which pneumonia usually showed a low temperature; the first being in old people, the second in infants while the vitality was yet low, and the third in young subjects reduced by other diseases before the pneumonia developed.

#### THE USE OF SPIRITS AND MALTED DRINKS IN THE DIET OF NURSING WOMEN.

Dr. A. Jacobi opened the general discussion on this subject with a paper. The subject, he said, was intimately connected with the question of the diet in general, and of the possibility of foreign substances entering the secretion of the mammæ, and from there passing to the digestive organs of the baby. As bearing on this point he reproduced extensively from a paper which he published in Gehrhardt's "Manual of Diseases of Children" some fifteen years ago, and elaborated in the *Journal of Obstetrics* in 1875 or 1876, since which time it seemed little advance had been made. In that paper it was shown that certain coloring-matters, opium, ethereal oils, col-

chicium, bismuth, iodide of potassium, arsenic, lead, antimony, and many other substances had been found in the milk after administration by the stomach.

For a proper understanding of this subject it should be remembered that milk contained the transformed cells of the mammary glands, and that the nursing child was, therefore, a carnivorous animal. Certain elements taken into the mother's system had a favorable influence on the milk production, not by transudation as fluids, but by their influence on cell development. The circulation of albumen especially was influenced by the use of water, and this was the explanation of much of the benefit derived from some other beverages. But in anæmic women and those of reduced health the milk was likely to be composed largely of serum exudate, and therefore to be impregnated with the elements circulating in the blood. The milk of a woman to-day may not be the milk which she will have within a week. But as long as the woman was in health and the milk was a real secretion, there was very little danger of anything floating in the blood getting mixed with the secretion of the mammæ and proving dangerous to the baby. A strong emotion, influencing the vaso-motor system, might also change the milk secretion into a transudation, during which medicines and other elements injurious to the child might escape through the mammary glands instead of through other organs of the system.

May a nursing woman take wine, beer, or spirits in any form? In answering this question we stumble at once upon the difficulty of not knowing what woman it is. A healthy woman, he said, may certainly take some alcohol and neither she nor her baby be damaged by it. In a feeble person the same quantity of spirits taken at one time might cause some danger to the baby. In literature there was very little by which we could be guided. What had been said against the use of spirits by nursing women had mostly emanated from fanatics, and was not based on scientific observation. The question of whether alcohol got into the milk at all seemed to have been settled in the affirmative, if not by chemistry, by numbers of good clinical observations. This much was sure, that blood saturated with alcohol could not be good nutriment for the foetus, and what was valid for the foetus, he thought, ought to be valid for the baby, provided the baby was receiving milk which was in part transudation rather than milk. The milk contained serum, and with it there must be alcohol; besides, alcohol pervaded the whole system, and it was not unlikely the mammæ were soaked with it as were other organs. Where wet-nurses got drunk it certainly endangered the baby.

Should a woman have alcoholic spirits or beer as a regular thing? In medicinal doses it was certainly permissible. But ought wine and beer to be given regularly, say with meals? The dextrine, phosphate of sodium and sugar, claimed as nutritive ingredients of these beverages, were present in foods in still larger quantities. Beer could not be taken in sufficient quantity to get any benefit from lupulin. He would answer the question whether there was any necessity for these beverages except as medicines negatively. Where a stimulant was required a dose of wine now and then might be indicated. The most we could say was that a small quantity regularly given would not be harmful. It might do good with two or three of the four or five meals which a nurse should take daily. A nursing woman needed albumen, and, so far as any nutritive elements were concerned, it should be obtained from farinaceous food and milk, not from liquors. The nursing woman required one hundred and fifty to one hundred and sixty ounces of albumen a day, other women only ninety ounces. The extra supply was well obtained from oatmeal and barley.

Dr. E. L. Partridge thought the general subject of the use of spirits and malted drinks might be conveniently subdivided as follows: First, do such drinks improve lactation? Second, do they possess any deleterious influence? Third, have we any other means which will take the place of this one for improving the nutrition of the mother and thereby of the child, or perhaps more directly influence the nutrition of the child?

His remarks would be entirely clinical. He believed an increased quantity of milk could be obtained through the use of alcohol in certain forms and of malted drinks. First, it might take place through increasing the quantity of liquid previously passing through the gland. Here, however, one simply increased the quantity of the milk. It enabled the woman to nurse the child, whether or not it benefited the child. The second action was through improving the woman's general health, and thus improving the function of lactation. Inasmuch as most nursing women did have reduced health at some period, it was not unlikely that the vaunted benefit from wine and malted drinks had some foundation in fact, the explanation being that just suggested. Here, however, the spirits were used medicinally rather than as beverages, the action being in the improvement of the maternal health.

It seemed to him that high-pressure nursing, or nursing through the continued use of stimulants, was not desirable; no more desirable than for the drunkard to keep up his life of excitement through the aid of alcohol. It was undesirable for both mother and child, and in the mother brought about



functional disorders which produced injury, if not to the first child, at least to the second or third.

A further possible injury from the use of a moderate quantity was in establishing the alcoholic habit, and aggravating a gouty condition. He believed that in many of the so-called malted extracts a great deal of sugar was added to preserve them.

The question of harm to the child, caused directly through giving alcohol, was an interesting one. Personally he had never been able to see any toxic influence upon the nursing child where spirits and malted liquors had been taken by the mother in moderation, and he had not seen cases where they had been used immoderately. The children had not manifested sleepiness, irritability, or other signs differing from those of other nursing children. Almost anything which the physician suggested that the nursing woman take, with the assurance that it would help her and improve the milk, would be of actual benefit simply because it tended to relieve anxiety and quiet her nervous system.

Speaking of cases individually, he thought that in, for instance, Englishwomen, who were accustomed to take malted drinks daily, a certain amount would cause no great harm, and perhaps would prove of benefit. In persons not at all accustomed to them, he thought no benefit would be derived from commencing them in any form during lactation, except in purely a medicinal way. It might be laid down as a maxim that whatever was in the interest of the mother was in the interest of the child.

Dr. August Seibert said a great deal of beer was drunk by the laboring people in this city, including the nursing women, and it was in the form of pitcher beer. They sent out for it morning, noon, and night; the keg had been tapped perhaps the day before; it was not fresh beer; bacteria had developed in it; and it was his belief that they passed through the nurse's milk into the stomach of the child and there produced a poisonous influence. For instance, a child, immediately after nursing, showed elevation of the temperature, which lasted about an hour, followed by profuse sweating. At the next nursing this was repeated, and so continued twenty-four hours. No explanation could be found until a friend told him he saw the wet-nurse coming out of a saloon with beer. She was discharged and the attacks ceased. He had made it a custom, when called to see children with gastro-intestinal disturbance, to forbid the mother taking beer as long as the attack lasted, and he had found in a certain class of people that the rule proved of benefit. As to what kind of bacteria, and how

many got into the milk taken by the nursing child, he did not know.

Dr. Egbert H. Grandin disagreed with the last speaker. He had always been in the habit of allowing nursing women, when they seemed in need of a tonic or stimulant, some malt liquor, and he had never been able to trace any injury to the child from the moderate use of such beverages. With regard to the class of women needing alcoholic or malt liquors, he also differed from Dr. Jacobi, for he had found that it was the anæmic women, those who possessed but little glandular tissue in the mammæ, who in consequence were most likely to make poor milkers, who were most benefited by the judicious use of malt liquors, by which he meant not alcohols, whiskeys, and brandies, but beer, ale, porter. In women with good mammary tissue and plenty of milk, who could be taught to nurse their infants regularly and judiciously, he found no need of any such beverages. In the other class of women he had observed direct benefit rather than injury to the child after allowing the mother a moderate amount of malt liquors; the milk was not only increased in quantity, but also in quality. He had never yet been able to trace any gastro-intestinal disturbance in the child to the use, not the abuse, of such drinks.

Dr. Jacobi, in closing the discussion, said he thought all the speakers were agreed on the fact that alcoholic liquors were certainly unnecessary and mostly injurious when taken by nursing women. All were also agreed that the abuse or large use of malted liquors was certainly not indicated. Further, that if they were used at all they should be used for certain reasons, either as a stomachic or as a tonic generally.

It would be well if all medical men would fully appreciate and be guided by the fact that what nursing women needed was a full supply of material from which milk was made and good mammæ in a healthy condition. The gland, however, need not be large, for often small glands surrounded with little fat were the best milk-producers. What was especially necessary was an increased quantity of carbo-hydrates, and especially of albuminates. If liquors were required to stimulate the digestive organs, let them be given for that purpose as one would give *nux vomica* in other cases, and no further.

## Current Literature.

### I.—HYGIENE AND THERAPEUTICS.

Füth : On the Value of Inhalations of Compressed Air in Rachitic Children. (*Jahrb. f. Kinderh.*, xxx. 3.)

The conclusion of the author's experiments with rachitic children was that by the use of compressed air they obtained better ventilation of the lungs, that tissue-changes were more active, and that the entire condition of the patients was improved. Catarrhal difficulties of the lungs became less and less pronounced. The tendency to atelectasis and the existence of pneumonic phenomena became less manifest. Beginning rachitic deformities of the thorax were checked, and extensive deformities were improved or even cured.

It was also observed in connection with these investigations that the inhalation of compressed air was very favorable in its effects upon bronchial catarrh and broncho-pneumonia in cases which were independent of rachitis. Especially was it serviceable in cases of diffuse chronic bronchial catarrh. It is also to be recommended as a means of preventing atelectasis, but it is valueless in cases in which atelectasis already exists, since under ordinary circumstances compressed air cannot be forced into the parts which have become thus affected. The paralytic thorax is also an indication for this treatment, since it indicates either the presence of phthisis or a predisposition to it, so also is pleuritis and the deformities of the chest resulting from rachitis. The enforced exercise which results from these inhalations causes the resorption of exudates and a healthier condition of bones and muscles.

A. F. C.

Uhlig : The Alimentation of Sick Infants with Sterilized Milk. (*Rev. Mens. des Mal. de l'Enf.*, December, 1889.)

Heubner has made, in his clinic, a series of experiments with sterilized milk, according to Soxhlet's method, upon infants with digestive troubles. His method consists in dividing the total quantity of milk into a certain number of portions, which are poured into an equal number of bottles, the milk then being boiled in these bottles, and each one being subsequently used as a nursing-bottle. In this way the milk is protected from the changes and infections resulting from repeated manipulations. For children under four months the milk is



diluted with an equal quantity of water before boiling, and to each litre of the mixture thirty grammes of sugar of milk are added. For those who are over four months the milk is used undiluted. Before using the first nursing-bottle in the set the stomach of the infant must be washed out in accordance with Epstein's method, a warm solution of chloride of sodium being used for simple cases, while in those in which there are diseased conditions of the stomach ten centigrammes of resorcin are to be added to each five hundred grammes of fluid. This irrigation not only removes the contents of the stomach, but disinfects it as well.

Heubner's experiments included thirty-nine cases, the infants varying between the ages of five weeks and eleven months. Twelve of these had acute dyspepsia with dyspeptic diarrhœa, twenty had chronic dyspepsia with severe disturbance of nutrition, and the remaining seven had acute gastro-enteritis. All the patients were in a very unfavorable condition of nutrition, and with most of them the disturbance had lasted some time. There had been an average loss of weight since the beginning of the disease of nearly fifty per cent. To each child was given a daily allowance of two bottles of pure milk and three of diluted. Of the thirty-nine children eleven died, but four of the deaths were due to intercurrent diseases in cases in which the digestive troubles had been much ameliorated. That is, the mortality from digestive diseases alone in this series was only twenty per cent., which is far less than is the rule with diseases of very young infants. The weight in sixteen of these cases was soon normal again. On the average the increase was one hundred and forty-four grammes per week for each child. This method of alimentation involves so little expense that it is to be hoped that the use of sterilized milk may be generally adopted in cases in which the natural supply is deficient.

A. F. C.

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## II.—MEDICINE.

Beever: Congenital Pemphigus. (*Lancet*, November 30, 1889.)

The patient was a female aged twenty-five years. When two weeks old she had a pemphigus eruption, which has continued ever since.

She had been under treatment at various hospitals.

These cases are difficult to diagnosticate in infancy. Bul-  
lous syphilide was usually limited to the palms and soles, but ordinary pemphigus was more extensive. In cases of pemphigus the slightest local irritation will cause a bulla.

Carr: Acute Nephritis and Uræmic Convulsions. (*Lancet*, January 25, 1890.)

The child was six years old. The leading features in the case are summarized as follows:

1. Nothing definite could be made out as to the cause of the disease.

2. Uræmic convulsions and vomiting are not of serious significance in the acute nephritis of children.

3. The rapid rise of temperature apparently due to convulsive attacks only.

4. The cardiac hypertrophy occurring with extreme rapidity, and its rapid return to normal immediately upon obtaining vicarious elimination through the skin and bowels.

5. The rapid improvement following the injection of pilocarpine.

Is it possible that the alkaloid may act as a direct antidote to some poisonous matter in the blood?

6. A noteworthy point is the persistence of uric acid in the urine, as if some defect of eliminative action remained after all other signs of renal mischief had disappeared. Could it be due to an excessive quantity of milk being given? The fact that it disappeared when the patient had a more mixed diet is significant.

Widenmann: The Etiology of Tetanus. (*Rev. Mens. des Mal. de l'Enf.*, December, 1889.)

A child eight years of age who had always been in good health received a wound upon the cheek as the result of a fall from the top of a wall upon ground which was covered with horse manure. On the sixth day after the accident a splinter was withdrawn from the wound. A small quantity of pus flowed, but the wound cicatrized rapidly and the swelling of the cheek diminished. After six days there were contractures of the face, two days later trismus, two days later opisthotonos, and then death on the evening of the same day. The author inoculated mice and rabbits with splinters of wood taken from the wound, also with pus from the wound and with soil taken from the place where the fall occurred. In each case he was able to obtain a typical experimental tetanus. These are his conclusions:

1. Tetanus is an infectious disease.

2. The infecting agent may live and proliferate in soil covered with dung and upon objects brought into contact with the soil.

3. In the wounds of individuals attacked with tetanus one cannot find the bacilli which Nicolaier considers the specific infecting agents of tetanus.

4. The virus of tetanus has a period of incubation which varies directly in duration with the age of the individual.

5. The action of the poison is intensified when the infecting agent, taken from a warm-blooded animal, is subjected to successive cultures and then inoculated anew.

6. The clinical symptoms of tetanus are identical in man and animals.

A. F. C.

Georensen: The Incubation Period of Scarlet Fever. (*Jahrb. f. Kinderh.*, xxx. 1 and 2.)

Opinions differ widely in respect to the incubation period of scarlet fever, and one must conclude that such a period can hardly vary within such wide limits. In ten cases of this disease occurring in patients who were operated upon by Paget the period was one day in two, two days in three, and three days in three. In twelve cases of puerperal scarlet fever the period was apparently three days in nine of them. In sixteen cases in which the disease followed tracheotomy the period was apparently three days in twelve of them. In all these cases, therefore, in which the infection was associated with a continuous lesion the period was very short, in two of them being less than twenty-four hours. Apart from this form of infection, there are recorded cases in which the period of incubation was very short, varying from one to four days. Thomas considers that, as a rule, the period is from four to seven days. It would seem probable that in cases in which infection is received through a wound the period is shortened. It is possible that, in a narrow sense, there is no true incubation period of the disease, but that there is only a longer or shorter period of time in which the virus is being disseminated. This hypothesis does not, however, furnish a very satisfactory explanation of the facts in the case.

A. F. C.

Tirard: Thrombosis of the Cerebral Sinuses following Otorrhœa. (*The Lancet*, January 18, 1890.)

The patient was four years of age, had had no previous illness until three months before, when a slight discharge was noticed from the left ear. Following this the child had measles. From that time he lost flesh and strength. Just previous to coming under observation he had had several severe convulsions, had been stupid, and had not spoken or taken notice of his friends.

On examination, he was emaciated, tongue foul, teeth covered with sordes, bowels constipated. He was semi-conscious and occasionally had slight convulsions, in which



the left arm was chiefly affected. There was no drawing of the face; the pupils were equal; there was no squinting, no retraction of head, and no tenderness.

The patellar and plantar reflexes were present, equal and normal. There was no anæsthesia or analgesia. *Tache cérébrale* could easily be shown. There is a purulent discharge from the left ear. The urine contains a trace of albumen.

Following this there were several convulsions and a steady rise of temperature for two days. Then there was a surprising return of consciousness. Examination of the chest showing dulness and crepitation over base of left lung.

One week after admission the mouth was noticed to be drawn to the left.

Trembling of the left hand resembled the oscillations of paralysis agitans rather than the wide-jerking movements of chorea. When the child was lying undisturbed these tremulous motions ceased, but became exaggerated when the limb was raised, and were then accompanied by tremulous movements of the face.

Death occurred three weeks from the date of admission.

The post-mortem showed thrombosis of the cerebral sinuses.

There were numerous small abscesses in the lungs, apparently from infarctions.

The longitudinal and lateral sinus contained well-marked decolorized thrombi. In the latter they were soft; in the former firm. There was pus in the left tympanum and in the mastoid sinuses. There was no perforation of the membrana tympani, and there was no necrosis of the petrous bone.

Turner: Atrophy of Tongue and Optic Disks, with Paralysis of Soft Palate and Larynx. (*The Lancet*, December 14, 1889.)

Dr. Turner showed at the Hunterian Society a girl aged five years, suffering from atrophy of right side of the tongue, paralysis of the soft palate and larynx, loss of power in the right arm, with some atrophy of muscles of arm, and atrophy of both optic disks.

The symptoms dated from a series of right-sided epileptiform attacks, which commenced six weeks after an attack of scarlatina, and occurred daily for two months.

At first there was general paralysis of all the limbs.

There was no evidence of syphilitic inheritance, and it was thought that the symptoms were due to some specific meningeal lesion at the base of the brain, involving the ninth and a portion of the eighth cranial nerves on the right side.

## III.—SURGERY.

Douglas: Traumatic Dislocation of the Hip in a Young Boy. (*The Lancet*, November 9, 1889.)

The patient, aged seven and a half years, while carrying a younger brother was pushed and fell, his right leg doubling up under him. The right leg presented the usual signs of dislocation at the hip-joint. Under chloroform the leg was flexed on the thigh and the thigh on the abdomen. The limb was then rotated inward towards the middle line and over the other limb as the movement of extension was begun. The head of the femur rolled into its place easily.

Freer: The Surgical Aspect of Rickets. (*Birmingham Medical Review*, May, 1889.)

For slight cases of lateral tibial curves, the author applies splints to the inner side reaching from two inches below the perineum to two inches below the inner malleolus, with straps at top and bottom and another at the greatest convexity of the curve. They are at first worn continuously, but after a few months may be left off at night. In children over three years of age or those with anterior curves, when instruments have been tried for a year without success, osteotomy should be performed.

Genua valga require somewhat similar splints, with a piece of webbing passing around the back from one splint to the other, a broad centre strap drawing the knee to the splint.

The author favors Macewen's operation for osteotomy as being safer and more rational than Ogston's. For anterior and excessive lateral curves it is necessary to remove a wedge-shaped piece of bone. The chisel is the best instrument for this purpose, one with a thin broad blade being preferable.

For flat-foot light manipulations are useful in all cases. When much deformity exists a paraplastic splint is applied while the foot is held in an adducted position. Older children require a well-fitting boot and a Thomas's heel. When much force is required for the restoration of the arch, a Holland sole or layers of felt or rubber is employed. The appliance, whatever it may be, should be removed night and morning and the muscles developed by manipulation, exercise, and bathing. When the scaphoid and tarsal bones have become fixed in the deformed position forcible manipulation under anæsthetics should be employed, and sometimes tenotomy of contracted muscles. Osteotomy is never required.

For spinal curvature the author employs a brace with

elastic lacing in front. When there is pigeon-breast a pad is placed over the sternum. Lordosis requires exercises and massage.

Rotary-lateral curvature requires above everything else exercises and massage. In certain cases the plaster jacket is required, but the so-called "instrumental supports" have a positively baneful influence.

**Carmichael: Two Cases of Empyema treated by Aspiration: Recovery.** (*Edinburgh Medical Journal*, August, 1889.)

**CASE I.**—A girl, aged eight, admitted to hospital October 24, 1888, with signs of fluid at base of right chest. Two days later five ounces of pus were removed by aspiration. Four days after this she expectorated a quantity of pus with manifest relief of symptoms, and no fluid was found by hypodermic needle. After two weeks fluid again accumulated and two ounces were drawn off. From this time she steadily improved, and was discharged, cured, on January 14.

**CASE II.**—A boy, aged eight, admitted November 28, with signs of limited effusion at base of right lung. Pus was withdrawn by hypodermic needle, and again one week later. He was put upon maltine and cod-liver oil, and in two weeks no pus could be found. He steadily improved, and was discharged, cured, on January 14.

**Eve, Frederick: Congenital Tubercular Tumor of Face.** (*Lancet*, November 14, 1889.)

A male infant, eight weeks old, was suffering from a tumor on the right side of the face. The mucous membrane was not adherent. The skin over the tumor was adherent. The tumor was noticed at birth and had increased in size since then. It was removed by an elliptical incision, and the wound healed by first intention.

Microscopically, the tumor was made up of nodules in which were numerous giant cells surrounded by masses of leucocytes. These were embedded in much fibrous tissue mixed with the ordinary structures of the cheek. The tumor on section was of a pale yellow color.

That this tumor was congenital is of great pathological importance. Until recently its existence was doubted; but recently a mass of evidence, both clinical and experimental, has been accumulated, proving incontestably that tuberculosis may be transmitted from mother to foetus.



## Bibliography.

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TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. VOL I. First Session, Washington, D.C., September 20, and Baltimore, Md., September 21, 1889, together with the Proceedings of the Meeting for Organization, held in Washington, September 18, 1888. Edited by William Perry Watson, A.M., M.D., Recorder. Published by J. B. Lippincott Company, Philadelphia.

This, the first volume of the transactions of a new society, is a creditable book of three hundred and twelve pages, but it lacks what all such books should have,—viz., illustrations. When the Society was organized, forty-three members were enrolled,—twenty-one from New York City, seven from Philadelphia, three from Boston, two each from Washington, Canada, Baltimore, and Chicago, and one each from Cincinnati, St. Louis, Ann Arbor, and Jersey City. In 1889 forty-six members registered, a fair number, considering the comparatively small number of the medical profession who believe that pediatrics requires special study. The organization of an *American* society for the comprehensive study of pediatrics should do much towards elevating the study to its proper position, especially in medical colleges, where hitherto, for the most part, its professional exponents have been denied the power and privileges that other professors have had.

At its first session twenty-seven papers were read. Though ten or more were but reports of cases, the cases were in general well reported. Dr. A. Caillé contributed five papers,—“A Case of Janiceps Asymmetros,” “Membranous Croup in a Girl Twelve Years Old: Tracheotomy: Recovery,” “A Plea for a General Adoption of Personal Prophylaxis in Diphtheria,” “Prolapsus Recti due to a Large Stone in the Bladder of a Child Three and a Half Years Old: Removal: Cure,” and “Two Cases of Nystagmus Associated with Choreic Movements of the Head in Rachitic Babies.” Physicians, in general, will be loath to agree with the writer that “the time has come when the profession is prepared to admit to the public that the best and only treatment of a case of diphtheria is entirely symptomatic,” but they will heartily endorse his plan of attempting to keep the mucous membranes of the body in as healthy condition as possible as a preventive. In the removal of a stone from the bladder of a young child and the relief of a prolonged and uncertain condition, Dr. Caillé has shown the value of a thorough examination in the affections of children as well as adults. A point of especial interest in one of the cases of nystagmus was that when light was excluded from the eyes of the child by an eye-bandage the choreic movements ceased entirely.

Dr. Charles Warrington Earle's three papers—viz., "General Subcutaneous Emphysema," "The Necessity of Prolonged Rest after some Attacks of Diphtheria," and "Carpo-Pedal Contractions—One Manifestation of Tetany"—are all interesting. The first is an excellent *résumé* of what is known about a rare condition. Dr. J. O'Dwyer furnishes a surgical paper on "Diaphragmatic Hernia, with Operation," in a child three and a half years old, and an argumentative paper on "The Apparent Physical Paradox involved in the Re-Expansion of a Collapsed Lung while a Free Opening remains in the Pleural Sac." The doctor claims that "there is no other way of explaining the inflation of a collapsed lung except by the mechanical effect of forced expiration."

Dr. Francis Huber gives the history of two cases of "Double Emphysema," in children five and thirteen years of age respectively, cured by incision and drainage. This paper excited considerable discussion. The majority of participants commended incisions in such cases, but condemned frequent irrigation. The doctor also read a paper on "Acute Peritonitis following Vulvo-Vaginal Catarrh in a Girl Seven Years Old, simulating a Perforation of the Appendix: Laparotomy: Death." The peritonitis followed a vulvo-vaginitis, which the writer infers was not of specific origin because the hymen was intact and there was no evidence of violence about the genitals. In our experience, gonorrhœal vaginitis may exist with an intact hymen and with no evidence of what might be called violence.

Dr. Dillon Brown's paper on "Noisy Respiration in Children" is of especial interest, as so little is found in text-books on the subject. We are sorry to notice in the excellent paper by Dr. J. H. Fruitnight that he advises the use of acetate of potash, a most disagreeably-tasting medicine, and that throughout the paper palatable preparations are seldom mentioned.

"Tuberculosis of the Testis in Childhood," by Dr. Henry Koplik, "Sclerema Neonatorum," by Dr. William P. Northrup, and "Two Fatal Cases of Biliary Cirrhosis (Congenital Pernicious Icterus) in the same Family," by Dr. Marcus P. Hatfield, are excellent reports and summaries on rare diseased conditions in children.

Also rare is the case of "Congenital Malformation of the Heart, Resembling Dextrocardia: Entire Absence of the Septum Ventriculorum: Pulmonary Stenosis, and Patent Foramen Ovale," the child living twenty-one months, reported by Dr. L. Emmett Holt; also the "Case of Ataxia in a Child Twelve Years of Age," reported by Dr. A. D. Blackader, and the "Two Cases of Spastic Paraplegia in the same Family," reported by Dr. Thomas S. Latimer.

"Practical Points in the Diagnosis and Treatment of Malaria in Children," by Dr. Hiram N. Vineberg, is a paper based upon a study of eighty cases of malaria in early life, and lays much stress on the enlargement of the spleen and hæmatozoa in the blood as prominent signs of acute malaria. It seems to us some of the doctor's premises are wrong, and we cannot believe that the administration of quinine will settle the diagnosis.

In no branch of pediatrics has so great an advance been made within the last few years as in dietetics of infancy and the treatment of diarrhœas. No less than five papers on these subjects appear in the "Transactions,"—viz., "The Artificial Feeding of Infants," by Dr. A. V. Meigs; "Recent Improvements in Infant-Feeding," by Dr. J. Lewis Smith; "A Study of some of the Bacteria found in the Fæces of Infants affected with Summer Diarrhœa," by Dr. William D. Booker; "Report on Two Years of Experience in the Mechanical Treatment of Gastro-Intestinal Disturbances in Infants," by Dr. A. Seibert; and "A Contribution to the Study of the Summer Diarrhœas of Infancy," by Dr. John A. Jeffries.

Dr. Meigs believes that the diversity of opinion which has been apparent among physicians in regard to the proper method of feeding infants is being removed, and claims that whenever cow's milk, prepared as he directs, has been faithfully given, the results have been almost always excellent. In the discussion that followed Dr. Meigs's paper, it is noticeable how little reliance is put by the participants in the patented foods. Dr. Smith believes that milk should be the chief ingredient in the food of infants, but he advocates washing out the stomach, sterilization, and the use of prepared flour as an ingredient.

Dr. Seibert, while naturally enthusiastic as to washing out the stomach and bowels in all cases of entero-colitis and gastric catarrh, states that in true inflammation they may do harm. It may be asked, Can we always tell when true inflammation is present? He claims that "collapse in cholera infantum is the strongest possible indication for stomach-washing." The belief of some who discussed the writer's paper was not as favorable for stomach-washing. Dr. Jeffries's paper is an attempt to prove that summer diarrhœas are caused by bacteria, and are not due to heat, improper food, etc. While the paper is an excellent contribution, we cannot see that its conclusions are conclusive. Dr. Booker's paper is in reality a close study of the bacteria in the fæces of infants having summer diarrhœas, and is valuable.

Finally, Dr. A. Jacobi, the first President of the American Pediatric Society, furnishes a masterly paper on "Aneurism in Early Life," and in his address to the Society establishes the claims of pediatrics to be considered a specialty, but in a wider sense than the term is generally used, not dealing with a special organ, but with an organism which, by its peculiar development, growth, and susceptibilities, requires special study in medicine and surgery. Pediatricists, therefore, should be recognized as the natural medical guardians of children in their home-life and in their school-life. And the time should come when the weight and authority of the American Pediatric Society should be felt and acknowledged in the education of American children.

Altogether, this first volume of the Society is a valuable addition to American medical literature.

J. W.



THE  
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[No. 9.]

Original Communications.

DISEASES OF THE MOUTH (NON-SURGICAL).

BY F. FORCHHEIMER, M.D.,

Professor of Physiology and Clinical Diseases of Children, Medical College of  
Ohio, Cincinnati, Ohio, etc.

(Continued from August Number.)

X.—PAROTITIS.

INFLAMMATIONS of the parotid gland are due to the localization of some morbid agent within the gland substance, which is usually of a general systemic nature. We exclude here those forms of parotitis due to trauma, and we see any number of general disease-producers affecting the parotid gland. A great many attempts have been made at classifying the various forms of parotitis; all of which, however, more or less unsatisfactory on account of the purely pathological basis which underlies them. Any classification must, of necessity, be incomplete until the specific cause or causes for inflammation of the parotid gland will have been discovered. For the present we are justified in making a clinical division only; with the reservation that future discoveries may make a great many subdivisions. Indeed, from clinical observation, it is possible to reason out more than two kinds of parotitis; but, as we have only probabilities and uncertainty to deal with, it seems wiser to defer these hair-splittings until the subject can

be worked out from the proper stand-point. For our present purpose a division into primary and secondary parotitis will be sufficient. By primary parotitis is meant that form of inflammation of the parotid which develops without the intervention of any other cause than the one producing this inflammation; by the secondary form is meant that inflammation following or accompanying some other disease, in which it is rational to suppose that the poison producing this disease also causes the parotitis. Under the first heading is found, especially, epidemic parotitis, either in its epidemic or sporadic form, mumps; and, secondly, that rare form of parotitis due to an extension of an inflammation from the mouth to the parotid gland, by way of Steno's duct.

#### XI.—EPIDEMIC PAROTITIS (MUMPS).

This disease was thoroughly well understood by the ancients, Hippocrates, Celsus, Ætius, Galen, and others, and they described it just as it would be described to-day, even as far as the complications are concerned. There is, then, no historical development of the subject; indeed, it might be said that very little new has been added since the days of Hippocrates, and if anything new will be added it will be in the direction of the etiology of the disease, concerning which we are completely in the dark. If we are permitted to judge by analogy, we are forced to class mumps with the acute infectious diseases: it has a period of incubation, one of invasion, the disease runs its course in a self-limited way; it is contagious, and the same individual is subjected to only one attack. The cause of the disease has not been discovered; but, as far as we know, it is a poison that is not very virulent; it may limit itself to a city, to a village, or even to one institution (a children's hospital, an orphan asylum) in a place without spreading, notwithstanding the fact that no precautions are ever taken to prevent its spread. Again, it may spread from one of these places of infection, so that it becomes quite general. On the other hand, sporadic cases of mumps are not so uncommon, and with a very slight degree of precaution, such as would not at all influence the spread of scarlatina, measles, or pertussis, these cases can be made to remain sporadic. The disease is found in all latitudes, and, as far as

we can ascertain, in all countries. Some regions remain untouched for years, then several successive epidemics will occur, nobody seeming to know whence they come, and then they may remain exempt again for years. Or, in large cities, sporadic cases may occur at all times, and suddenly an epidemic may develop. In large clinics mumps may be observed at almost any time of the year. The statistics of Hirsch and Leichtenstern seem to prove that the disease is most common in fall and in winter; this must be explained upon the same principle that influences the occurrence of measles, scarlatina, pertussis, diphtheria, etc. In fall and in winter children are more apt to be kept in the house than in spring and summer; if they come in contact with other children it will be very directly, in rooms. In spring and summer they are out of doors, and the contact there is more or less indirect, at all events in the open air, and contagion is not so likely to be carried.

Much stress has been laid upon the weather as an etiological factor in the production of the disease; cold, damp, rough weather predisposing to epidemics. Although this may be true, the direct relation between mumps and the weather has not, as yet, been discovered, and when the cause of the disease is isolated, it will probably be found that some other reason can be assigned to this apparent connection.

It would be idle to discuss the nature of the poison any further; this has been done very extensively, and the conclusions arrived at have differed somewhat. All that we know is how the invasion of a human being by this poison affects that human being, and that has been known since the days of Hippocrates. The poison is probably taken up by the mouth, and reaches the gland through Steno's duct, to have more or less effect upon the general system. This, again, is purely hypothetical, although we have very many poisons that act upon the general system which act in the same way,—the poison of typhoid fever, of diphtheria, measles, scarlatina, etc. For typhus fever and diphtheria this condition has been proven; in mumps we have a period of incubation; then more or less general symptoms; a period of invasion, when, after these, the local manifestation of the poison begins, to be followed by local development of the poison in remote parts. This cer-



tainly looks as if the poison first taken into the gland multiplies there; during its biological activity in the gland produces a something which affects the general system to produce the general symptoms. Again, this poison may be deposited in other places and develop there as it did originally.

Children are most commonly affected between the ages of three and five years (Barthez and Rilliet); the disease is very rare before this time, and almost unheard of in very old people. Here, again, we have the general law of acute infections complied with. The disease is of very rare occurrence in infants, although it does occur in them. The fact, however, that a physician has seen a great many cases of mumps in infants should always lead one to doubt his diagnosis; indeed, for a simple matter, there are very few diseases in which so many errors of diagnosis are made as in mumps. It is further claimed that males are especially predisposed to epidemic parotitis; statistical proofs are too meagre to prove or disprove this assertion. As occupation can have nothing to do with predisposition in this disease, it is difficult to understand why one sex should be more favored than the other. As long as the catching-cold theory held full sway in etiology the most curious statements were to be found in the books; indeed, very few have, as yet, fully emancipated themselves from the cold and moisture in specific diseases. All of these statements, however true they may be, must await the future for credence; at the present they have been discarded.

The duration of an epidemic varies very much. Sometimes it is months, at other times a year or more, as has been intimated before; mumps rarely dies out in large cities. The number of cases existing in a place at a given time cannot be estimated except by direct count, as mumps does not figure in mortality tables. It is, therefore, difficult to state positively that a large place is ever free from mumps. Sporadic cases are undoubtedly due to the same poison as the epidemic cases. Why these sporadic cases do not give rise to epidemics it is impossible to say. That the predisposition is removed by one attack can be urged for a certain number of individuals, but a good many individuals never get the mumps, even when exposed, and frequently a family, into which the disease has

been introduced, is spared the first time, to be attacked by a subsequent exposure.

The period of incubation varies very much, according to different observers, in different epidemics. As low as from three to four days to the other extreme of twenty-five days has been observed. Leichtenstern places the period of incubation as lasting from seven to fourteen days; Vogel-Biederf, nine to twenty-five days; Rilliet and Lombard, in an epidemic at Geneva, as from twenty to twenty-two days. It is difficult to fix the period of incubation for any of the infectious diseases, and it is more than probable that this period differs in different individuals. It would be decidedly exceptional, however, if any disease could vary so much in its effects upon the individual as, in one instance, to take three days only, to be followed by an effect, while in the other it would take twenty-nine days. It would seem most likely that we are dealing with an error of observation, which would be more than excusable in a disease like mumps, in which it might become impossible to localize exactly the source of infection.

On account of the fact that post-mortem examinations in mumps are so exceedingly rare, our knowledge concerning the pathological anatomy of the disease is very limited. Three views have been advanced: first, that the process is essentially a catarrhal one due to an inflammation arising in the salivary ducts and extending to the lining of the acini; secondly, that the inflammation arises and is limited in the large lymphatic spaces around the acini of the gland; and thirdly, that the inflammation is parenchymatous as well as interstitial. The second view has given rise to the term periparotitis, which was in vogue for a long time, but has now been discarded. The only absolute evidence (Bamberger) that exists is in favor of the last view, but there are several considerations that must be taken into account before it is accepted. The histology of the parotid gland has been worked out since Bamberger published his article in *Virchow's Handbuch d. Spec. Path. u. Therapie*, 1855, and it is more than likely that, microscopically, the pictures obtained by him would be explained differently. Furthermore, the investigations of Heidertain have placed the parotid gland in a class as altogether different from

the submaxillary and sublingual glands in that it is different in its structure, its physiological activity, and its nerve-supply. While the fact is accepted that all the salivary glands are sometimes affected by mumps, yet this is exceptional, and their differences in all respects between them may possibly be the reason why they are not always affected together. The inflammatory process, as a rule, terminates in resolution, but the old dogmatic statement, "suppuration, no mumps," is not founded upon correct observation. On the other hand, the suppurative cases of mumps are so exceedingly rare that they are to be looked upon almost like the recoveries from tubercular meningitis. A curious fact is to be noted, that the secretion of saliva is very little interfered with. If we would take the trouble to examine the saliva from the affected gland, we might find some changes, although the observations of Gerhard and Lombard seem to contradict this. It is hardly possible that such extensive alterations in the gland tissue, even if it be but interstitial should not be followed by some functional alteration; the more so is this the case where we know how little, in an experimental way, suffices to change the secretion. It is therefore more than probable that the saliva that has been examined is mixed saliva, the combined result of secretion from the other glands, and, as one of them is a mixed gland,—i.e., both serous and mucous,—even if both parotids were affected, a difference could not be readily detected, or that part of the gland unaffected produce sufficient saliva to cause the digestive changes.

As we are dealing with an acute infectious disease, the symptoms vary as they do in all of this class, depending upon the nature of the epidemic and upon the individual attacked. We can put down as the normal course of the disease about the following: the stage of invasion lasts from twenty-four to seventy-two hours; the local symptoms from eight to twelve or thirteen days, during which time the complications set in which may cause an indefinite sickness, but, upon the whole, the length of a normal attack, uncomplicated, can be put down as running from ten to fourteen days. In very mild epidemics the prodromal stage causes so few symptoms that it is overlooked. In very severe epidemics we have all the symptoms



of malaise, more or less fever, as high as  $104^{\circ}$  Fahrenheit in the evening, sometimes vomiting and diarrhoea, and, in irritable children, so-called brain-symptoms; twitching, restlessness during sleep, talking and crying out during sleep, vomiting, convulsions, with contracted, dilated, or unequally contracted or dilated, pupils. With the beginning of the local symptoms all of these general disturbances usually disappear. The first local symptom complained of is usually pain in a space between the mastoid process and the lobe of the ear; very soon this painful spot increases in size until the whole region around the ear, frequently the ear itself, and the whole side of the head becomes affected. Movement of the masseters, as in chewing, increases and promotes painful attacks, and in very mild attacks this is the only pain that is complained of by the patient. As a rule, the swelling begins in the same place where the pain is first noticed, to become general after from twelve to thirty-six hours. Upon this swelling and upon its accurate observation depend the accuracy of our diagnosis. The fact must not be lost sight of that the parotid gland, as its name implies, lies *around* the ear. There is a lymphatic gland that lies within or upon the parotid gland; there are lymphatic glands that lie behind, and others that lie below the ear; all of these may swell, and many a case of mumps is nothing more nor less than a swelling of one of these glands. There is but one gland that lies around the ear,—i.e., in front, following the general outline of the ear, below and behind,—and when the swelling is localized in this general outline, we are dealing with one thing and one thing only,—parotitis. From a point between the lobule of the ear and where the mastoid process should be the swelling extends backward around and forward around, and in mild cases is limited to this general contour. In some cases the swelling extends upward towards the orbit; in most cases it extends to the temporal region. Downward, it may go along the neck, being limited for anatomical reasons by the clavicle. All this swelling causes a peculiar appearance, but the effect upon the ear is especially characteristic. The swelling causes the ear, as a whole, to be shoved away from the side of the face, but on account of the fact that the lobule is the most movable part of the auricle, it

is most apparent there. Indeed, the upper part of the auricle seems nearer to the face than under normal conditions due to the swelling, while the lobule is turned up, pointing either forward or backward, and rotated, as a whole, slightly upon its horizontal axis.

Heretofore we have seen the superficial swelling only; in some cases the process attacks deeper parts, producing dysphagia, causing pharyngitis, laryngitis, and œdema of the glottis. The internal swelling, in double mumps, may become so great as to prevent swallowing entirely, and then we have the aspect of a very sick patient; or the œdema of the glottis may become so great as to demand operative interference; both conditions, however, are very rare, and much consolation may be derived from the consideration that the acme of the process is attained very quickly and is very short-lived. In some epidemics the submaxillary and sublingual glands are always enlarged; in others we find special lymphatic glands swollen. I have observed one epidemic in which the enlargement of the parotid gland seemed to be a secondary consideration, in that the principal swelling took place in a large lymphatic gland lying below and slightly in front of the parotid,—a gland belonging, probably, to the deep cervical chain. In this epidemic, the peculiarities of which were observed by several other physicians, the swelling began in this gland, was followed in a short time by a decided, though comparatively slight, enlargement of the parotid, and then ran its course in the usual way.

An examination of the patient reveals other facts. The lymphatic glands may be enlarged, the axillary, the inguinal, and the cervical; but not much reliance can be placed upon this symptom; first, because this enlargement is common to nearly all acute infectious diseases; secondly, because it is impossible, in any individual case, to state that the lymphatic glands are not of a normal size for that individual, or has not become enlarged from some other cause. It is claimed that, in a great many cases, the spleen also is enlarged; in another place ("Malaria," Keating's "Cyclopædia," vol. i.) I have pointed out the difficulties that beset this diagnosis. I have sometimes thought that the spleen was enlarged, but certainly

not often enough, nor constantly enough, to have made this symptom of any importance in the way of helping to make an early diagnosis.

The patient presents an almost comical appearance when the swelling has arrived at its maximum. He holds his head stiff, usually inclined towards the affected side; if both parotids are swollen, the head is held like a patient having cervical vertebral caries. The face is swollen; if unilateral, one side presents an altogether different appearance from the other; if bilateral, we frequently find the circumference of the face much greater than that of the head. On account of the swelling, the play of the facial muscles is interfered with and the expression of the face becomes set; even laughing or crying may hurt so much that the patient becomes very quiet. The folds of the face, if there be any, are obliterated, and the natural depression no longer exists; in this way the deformity may become great. In these cases the tongue and mouth become coated and foul; catarrhal or other forms of stomatitis may develop. The swelling itself is doughy, very painful, the skin covering the gland tense but anæmic; when it becomes red, it is usually presumptive evidence that mixed infection has taken place; in other words, that some other virus besides that of mumps is flourishing in the infected tissue. Besides the local pain, it will be found that the patient complains most of the difficulty in swallowing, but this mechanical disturbance may extend to the other organs; the ears sometimes become affected; the patient complains of tinnitus, shooting pains in the ears, slight deafness, and, rarely, middle-ear trouble may arise from a case of mumps.

Bilateral affection is common, possibly the rule; but this differs with the character of the epidemic. In some epidemics nearly all the cases are bilateral; in others, again, very few are found in which both glands become affected. As a rule, both glands are not attacked simultaneously; the one begins and is followed, in a few days, by swelling of the second. The swelling in the second gland does not attain the same degree of intensity as in the first, although this is subject to exceptions.

The attempt has been made to characterize the fever-curve of this disease; but variations are so very common that nothing



typical can be recognized. The more intense the infection the higher the temperature; the maximum may be observed during the period of invasion, to decline gradually during from five to seven days, until a normal evening temperature is attained, and to show exacerbations with the development of any complication. Affection of the second gland, for instance, always produces a rise in temperature. Close observation will establish the fact that all cases of mumps are attended with more or less fever; the rise may be very slight, but it will be found, especially in the evening. I have paid especial attention to this point, and have never, as yet, found a single case in which, at some time or other, there has not been a rise in temperature. From a theoretical stand-point, afebrile cases of mumps should exist, and further observation may, probably, establish their existence. I have never observed any case in which the maximum was much over 104° Fahrenheit, although some cases are on record in which this maximum has been exceeded. In some epidemics we find very low temperatures, in others we find few cases in which the temperature does not mount up; we no longer look upon the degree of fever as meaning direct danger to the patient, yet Debize (quoted by Leichtenstern, Gerhardt's *Handbuch f. Kinderkr.*, ii., p. 665) speaks of cases in which the temperature remained in the neighborhood of 104° Fahrenheit for several days, when a typhoid condition developed accompanied by "prostration, apathy, somnolence, delirium, dry fuliginous tongue and mouth." It has not been my lot to see such cases, and, having seen a very great number of cases of mumps, I am almost inclined to suspect that there was some other reason for this combination of symptoms than simple epidemic parotitis; the more so, as the author reports more than one case. The pulse does not present anything characteristic, usually following the curve of the temperature.

The affection, without complications, and even with most of those that are not extremely exceptional, can be looked upon as very trivial in nature. The fact that so little is known concerning its etiology shows how very rare mortality is; as to its sequelæ, more will have to be said in the future.

## Clinical Memoranda.

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### LECTURE AT THE NEW YORK POLYCLINIC, JUNE 21, 1890.

BY V. P. GIBNEY, M.D.,

Professor of Orthopædic Surgery.

Hip-disease; Compression Myelitis (Paralysis of Pott's Disease); Congenital dislocation of both knees complicated by extreme valgus, and Congenital dislocation of the Hips, with good result.

#### OSTEITIS OF THE HIP, TUBERCULAR (COMMON HIP-DISEASE).

GENTLEMEN OF THE CLASS:—This child, five years of age, German, presents to-day for the first time, and the history elicited is about as follows: Three or four months ago, without any known cause, fall or otherwise, she began to favor the right limb in walking. Little or no attention was paid to it because it was thought to be a bad habit, and the mother was not very observant. Four weeks ago, however, a rather sharp exacerbation appeared, shown by a more decided limp with scarcely any power to walk. So that really the mother dates her trouble from the beginning of this exacerbation. Whether she was lame six months ago or a year ago we cannot find out. The presumption is, however, that the disease began at least six months ago. The family history is reported as good; yet I do not cross-examine, for the reason that I attach very little importance to the family history. I am told that she has had no whooping-cough or measles or scarlet fever. Whether the mother understands fully what I mean, I do not know. I am told also that the child has little or no pain by day unless she walks too much, but screams out at night, waking first and then screaming. She does not admit that the child screams during her sleep. This is the rule in hip-disease, yet a number do wake and then cry. Possibly the reflex spasm in this case is so great that she does awaken on this provocation.

The little one, you see, is frightened and it takes some little tact to make an examination. In the first place, suppose we have her walk across the floor; you observe she has a distinct hip-limp, favors the right side, leans far to the right as she takes a step, and the step is shorter. It would seem like an old case of hip-disease, so great is her limp. Let us remove

the chemise now, and we find the spinal column apparently normal. By dropping a penny or two on the floor and having her pick it up, you observe she bends the column quite easily, yet keeps the right leg and hip extended while she bends on the left. The spinal column, however, is normally flexible. The child is becoming more reconciled, you see, under the influence of money, and I think we shall be able to conduct a very thorough examination. Looking at the nates, you observe, the right side is not so full as the left; it is flattened a little; the limb seems to be adducted. Placing the child now on its back on this table, I proceed at once to refresh my mind with the functions of a normal hip; so I take the left hip and, flexing the knee, proceed to flex the thigh, and I have no difficulty in flexing to an acute angle. At the same time, you observe the right limb is also flexed a little as I make this test, and the popliteal space is raised some three or four inches from the table. Then, as I extend, both limbs come down and the left limb, the normal one, comes quite down to the table so that the popliteal space touches without difficulty. Now I abduct this limb. You observe I can bring this limb over so that the outer side of knee rests on the table, with limb thus in complete abduction. The child offers no resistance, and is becoming quite reconciled. I now adduct, and throw the left thigh completely across the right thigh. I next extend the limb, and with very little force, my hand resting over the patella, make complete inward and outward rotation of the limb at the hip without resistance. I postpone hyperextension until I turn the child on its face. Proceeding now to examine the right limb, you observe the child holds the limb stiffly and every movement is resisted. I cannot flex without moving the pelvis; abduction is entirely out of the question; adduction is resisted, although the limb is in slight adduction, and rotation is resisted. In other words, the hip is locked by muscular action and at an angle of about  $150^{\circ}$ . This is best shown by flexing the sound limb at the hip to an acute angle, when one can roughly estimate the angle at the hip. It is, as above mentioned, about  $150^{\circ}$ . There is no glandular enlargement and no infiltration anywhere about the hip. The comparative measurements are as follows: R. A.,  $18\frac{3}{4}$ ; L. A.,  $18\frac{3}{4}$ ; R. U., 21; L. U.,  $21\frac{1}{2}$ . The circumference of the right thigh, six inches from the anterior superior spinous process, is exactly the same as the circumference of the left thigh, same point. The knees are the same in circumference. The right calf is one-half inch smaller than the left calf. Let me explain the meaning of the abbreviations above. "R. A." means the distance from a notch just below the anterior superior spinous



process to the lower border of the internal malleolus, right side; "L. A." means the same for left side. This gives the real length of the limb. "R. U." means the distance from the umbilicus to the lower border of the internal malleolus, right side; "L. U." the same for left side. We have, then, a practical shortening of half an inch. No atrophy to speak of, but an extraordinary amount of reflex spasm. I now proceed to test for joint tenderness, and instead of holding up the limb at the angle of deformity and striking the heel violently with my hand, I simply grasp the thigh, making a lever of it, using one hand for a fulcrum, pressure being made at the junction of the upper with the middle third, while with the other hand as the force, I make pressure against the inner side of the knee. Note, please, that I am careful not to attempt any movement of the hip while I make this test; if I do, I simply put the periarticular tissues on the stretch, and the joint sensitiveness is obscured. If without this movement, however, I get any signs of pain, I feel pretty sure there is inflammation in the joint itself. It may be of interest now to tell you that the pathology we accept at the present day is as follows: An osteitis, beginning in one or more of the centres of development on the proximal side of the epiphyseal line. This is near the centre of the bone, and the inflammation spreads like it does in vaccination. There may be more centres involved than we anticipate; there may be a centre or two in the acetabulum. A few days ago I excised a hip at the hospital where the abscess appeared above the digital fossa. I turned the head of the bone out and found it half gone, cartilage all gone, and sawed off the remnant of the head. There was no disease beyond this point. On thrusting my finger, however, into the acetabulum, I found this part broken up, so I took the Volkmann spoon and scraped away three or four pieces of bone, rounding the edges off in the acetabulum and leaving a soft acetabulum. This leads me to warn you against the first test I mentioned,—the common test of concussion. If it should so happen that the head itself was destroyed, leaving only a shell, then concussion, if the patient did not bring into play the muscles too vigorously, might indent the shell thus left, and if the violence were severe, you might break the shell and get pus into the joint. While this accident has not occurred to my knowledge, yet I can readily see how it might occur, and the objection, although a theoretical one, is a sound one. I measure now by Nélaton's line for the position of the trochanter major, and find it a little higher on this, the diseased side, than on the left side. The presumption, therefore, is that already changes have taken place between the shaft and the

neck, making the angle a little more acute. We understand, therefore, what pathological dislocation means. Seldom, if ever, does the head of the bone get out of the acetabulum. It may be destroyed, the trochanter may be driven up farther as the child walks on the limb, and thus we have the signs of a dislocation.

Without further comment on this case, a diagnosis is made of tubercular osteitis of the hip, commonly known as hip-disease. It is a pretty straight case barring the atrophy. The treatment to be adopted is a traction splint, what is known as a portable hip-splint. The pelvic band should be five-sixths of the circumference of the pelvis. In this case we make it sixteen inches. The stem should be the distance between the anterior superior spine on the sound side and a point two inches below the bottom of the heel. This extra two inches is for a patten or high shoe on the sound foot. The child will be provided with this splint as soon as possible. The traction will be made by means of adhesive straps on the side of the limb, and the patient will walk on a pair of perineal straps. It would be better, if the child could be so managed, to put it to bed with weight and pulley, the weight extending up to fifteen or twenty pounds with traction maintained long enough to bring the limb down into position and overcome this spasm of the muscles. Then the splint could be supplied with limb in normal position, and the

*Prognosis* is this: A useful limb, a limb without shortening, and a resolution of the inflammatory products. The time required for this is at least two years. At the end of this time the high shoe can be discontinued for two or three months, and then after this the adhesive straps can be omitted, while the foot-piece of the stem is converted into a rod which passes through a tube in the heel of the shoe. Two or three months of this treatment will suffice to effect a cure. In case abscess forms, which is improbable, the abscess can be treated surgically or not as circumstances warrant. The circumstances warranting surgical interference are pain, fever, interference with the use of the splint. It may be safe to say, also, that the child during this period can lead an out-of-door life; can get about on the splint as it can on a sound limb; can be very active, and exacerbations will be avoided. I omitted to mention the necessity for cod-liver oil and iron and stomachics as they are required. Keep the child's nutrition above par.

#### COMPRESSION MYELITIS.

The next case I show is in a child two and one-half years, presenting Pott's disease in the upper dorsal. Already a com-

pression myelitis has resulted by extension of the inflammatory process from the bones to the soft parts enveloping the cord. This constriction has produced a transverse myelitis. The treatment of this complication, according to my own way of thinking should be this: A solid plaster of Paris jacket with head spring, the tension being made up to the point of toleration. If after two or three weeks there be no signs of improvement, I would advise, by all means, heroic doses of potassium iodide. It is remarkable how tolerant these little patients are of the potassium iodide. They will stand from fifty to sixty grains three times a day if given in Vichy or milk, and in place of growing thin they grow fat. If the case does not progress rapidly, I should advise it going into a hospital and having traction made by a rubber cord attached to the head, countertraction being made at the feet through a girdle about the loins. The child ought to get well, and I believe will get well, with this plan of treatment.

It is curious to note the difference of opinions and the prognosis of this affection; the neurologist seems to look upon it as a mere matter of luck. I believe the orthopedist does the same. Some cases they say get well and some do not. Some get well under very simple measures, by the application of the Paquelin cautery, for instance. Gentlemen have written papers on this subject, a single case serving as a text. From a statistical stand-point these cases get well in from six to twelve months. A certain number "hang over" and are two or three years getting well, the average, though, being about six or eight months. The potassium iodide treatment is a hobby of my own, and my fellow-practitioners say that it is due to the existence of a specific element; some doubt my reports; this makes little difference to me from a practical point of view. I claim to get good results, and I do get good results. I don't know whether it is in the judicious management of the case or not; whether it is from a number of means employed. At all events, I have little hesitation in telling the parent that a recovery will take place.

The signs of a compression myelitis I presume you are all familiar with; if not, I will say that you first have a little loss of power in the limbs; in a week or two afterwards reflex spasm shows itself and an exaltation of the reflexes is noted; the foot clonus is very marked; if one touch the ball of the foot with his hand rather sharply, a tetanoid condition is excited, which lasts sometimes for a minute or two. If one tap the patella tendon, you get a distinct knee-jerk, and this sometimes extends into a prolonged period. I do not rely on removable braces, for the reason that parents are so prone to



abuse any privileges they have, and one never feels sure that the treatment is being carried out according to instructions. With a solid jacket, however, you are pretty sure to see the cases again, and can feel assured that everything is being done according to instructions.

I remember distinctly a child some fifteen years ago thus afflicted, who failed to get relief by a brace and head-spring, and was referred to a hospital in this city where the surgeon in charge was strongly in favor of the Paquelin cautery. He applied this to the child for a year or more, two or three times a week, and the child left the hospital just as it came in,—loss of power and exalted reflexes. Two or three years subsequently the child turned up at the hospital with the mother, walking; it came for a new brace. The mother had discarded the head-spring, and told me that about a year previously the little fellow began to walk. I have a case now under treatment, in an adult, where two attacks of paralysis have come on, each one relieved in a few months by a jacket and potassium iodide; the second attack was complicated by pneumonia. She is well to-day and getting about.

DOUBLE CONGENITAL DISLOCATION OF THE KNEES, COMPLICATED WITH EXTREME VALGUS, BOTH FEET, AND CONGENITAL DISLOCATION OF THE HIPS: EXCELLENT RESULT.

This child, which I now show to you, is nearly three years of age; came to the clinic when four weeks of age, the dorsum of the foot resting on the abdomen. This is no exaggeration, and the case has already been reported in the surgical section of the academy. When it presented, the tibia was resting upon the anterior aspect of the femur; the end of the femur could be felt distinctly in the popliteal space. The patella was rudimentary, and a great amount of spasm of the quadriceps femoris.

Under chloroform the deformity was reduced a little, ten or or fifteen degrees only. Two or three weeks subsequently another operation, and this time more was gained. Finally we got the limbs straight, then I applied apparatus to hold them so, and later still we began to flex the knees and hold them so with appliances. About a year ago the case was regarded as cured. The feet, however, were in marked valgus, and this deformity was overcome and shoes applied, built up on the inner side, so as to throw the child over on the outer side of the feet. A month or two later the patient appeared, and I discovered, for the first time, a congenital dislocation of

the hips. This condition exists now, but the patella was about one-half the normal size. As you see, the limbs are straight, the legs can be flexed past  $90^{\circ}$ , and the child is in excellent condition. As it walks there is very little deformity apparent; the gait is really very good.

I do not propose to do anything with the hips. I question very much the possibility of keeping the limbs extended for one or two years, which would be necessary to cure the deformity at the hips, and then, if such a thing were possible, in this case I doubt the ability to keep them in position after full reduction. I am aware that cases have been reported, and by competent men, where this deformity has been overcome. Where it is double, I do not advise clinic cases to undergo the treatment necessary.

In connection with this case I present another one, a child six months of age, who has

#### DOUBLE RECURVATURE OF THE KNEES.\*

This is really a subluxation at the knees. The patellæ here are rudimentary, and one can map out the posterior half of the ends of the femur. This child has also an extreme equinus, right foot, the anterior portion entirely void of any expression; the tendo Achillis is short; there is no varus or valgus. The left foot is in extreme valgus without equinus or calcaneus. The child has summer complaint already, and I do not advise any treatment for the deformity at present other than a little manipulation employed by the mother two or three times a day or oftener, which consists in flexing the knees and holding them so as long as she can. If the child gets through the summer, the deformity can be overcome both at knees and at feet.

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\* Seen through the courtesy of Dr. Mabbott of the Nursery and Child's Hospital.

## CASE OF CONGENITAL ABSENCE OF BOTH HANDS, WITH A REMARKABLE POWER OF USING THE STUMPS.

BY JAMES FINLAYSON, M.D.,

Physician to the Glasgow Western Infirmary, and to the Royal Hospital for Sick Children, Glasgow; Honorary Librarian to the Faculty of Physicians and Surgeons, Glasgow, etc.

THE congenital deformity, shown in the photograph copied here, had much interest for the large number of medical friends to whom I showed the girl. The extraordinary power she had in using the terminal portions of her arms excited much surprise. As may be seen in the photograph, the bones of the forearm were shorter than normal, and she had absolutely no trace of hands. There were, indeed, little wart-like projections on both stumps. On the left, this projection was seen to consist of two portions, the smaller one being on the radial side, while that on the ulna was divided into four by minute grooves. On the right stump, the wart-like projection was smaller and simpler. The photograph shows both.

Professor Cleland kindly examined the limbs for me. He found no trace of carpal bones. In the right arm the ulna was shorter than the radius, the end of which was somewhat curved. The radius and ulna were not united in either of the stumps.

The child could sup with a spoon. She could do this by inserting the end of the handle of a teaspoon under her sleeve, balancing the lower part of the handle on the stump, and guiding the contents to her mouth. If a tablespoon of the ordinary size were given to her while her arms were bare, one could see that she held it in the flexure of her right elbow, the end of the handle going behind the humerus, and the stem of the spoon being supported by the stump; if any difficulty occurred in lifting or filling the spoon, she steadied the tip of the spoon with her other stump. Her left stump guided the inclination of the basin as required. In this way she could sup milk with considerable rapidity and precision.

She could also write with a pencil on paper. She held the pencil between the two stumps. She had, apparently, only learned at school to write down figures.

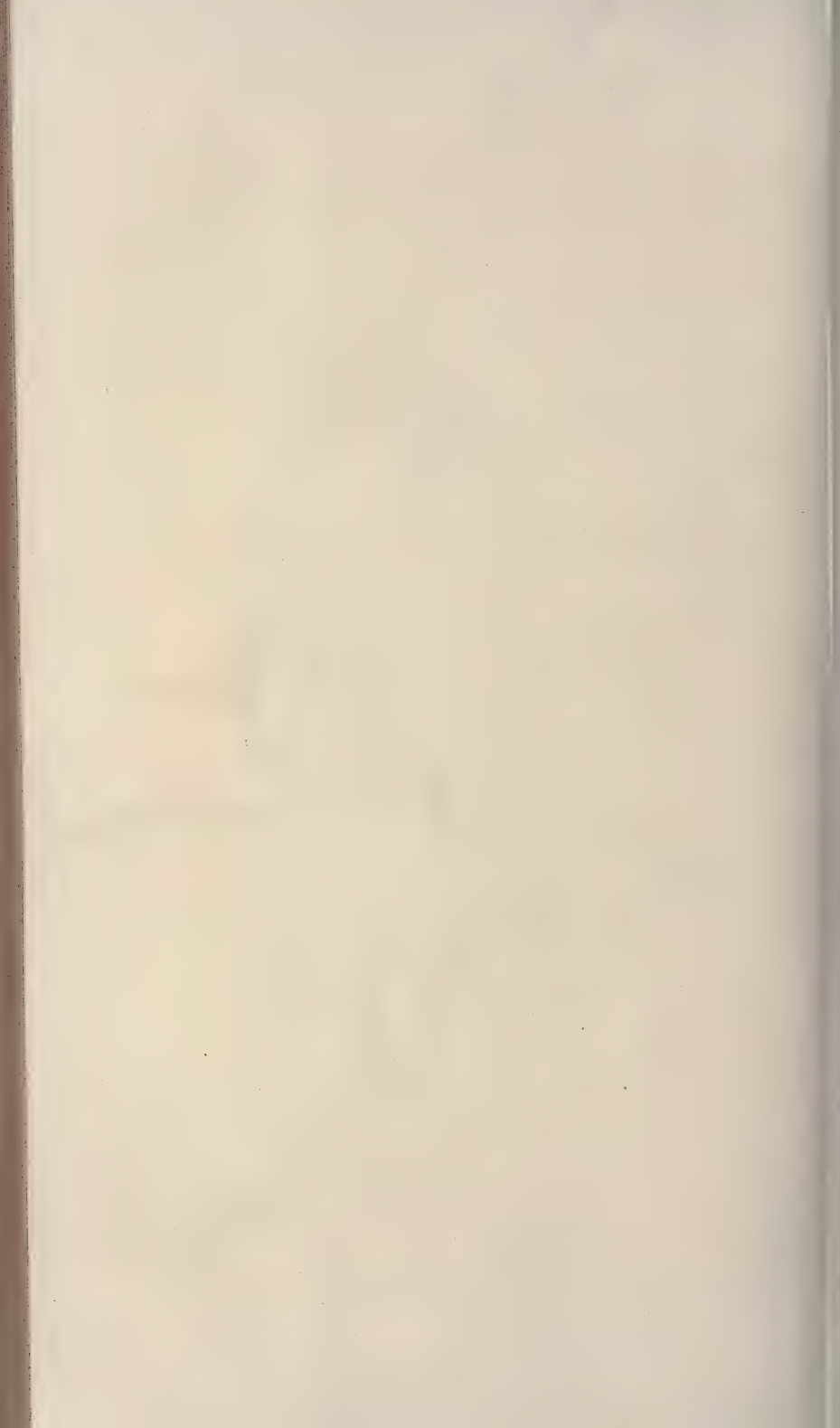
She could lift toys with ease, and she could take sweetmeats out of a wide-mouthed bottle by balancing them, one by one, on the stump, using the right one by preference. She could even lift ordinary pins off the floor.

She was tried with scissors, but she had not practised cut-





CONGENITAL ABSENCE OF BOTH HANDS.



ting paper before. She put the tapering corner of the right stump through the upper ring, and, after adjusting the paper, she put the angular part of the left stump into the lower ring, and then began to clip. This was done somewhat unevenly, but it had not been practised.

She could turn over the pages of a book with great precision, and was very particular not to take two leaves at a time.

The girl, Annie S., was admitted to the Royal Hospital for Sick Children, Glasgow, on April 20, 1889, for some digestive disorder. She was detained for a little time, after recovering, in order that her deformity might be studied further.

She was six years old. No malformations were known in the families of the parents. The first child of the marriage is living and healthy. The second was still-born. The third and fourth pregnancies resulted in miscarriage at the third month. Fifth pregnancy: the child was born alive, but only survived twenty hours. Sixth pregnancy: the child is still living and well. The seventh pregnancy resulted in the birth of the girl here described; she was born at the seventh month. The only incident the mother could mention as notable was the occurrence of a bleeding, similar to the menstrual discharge, about the middle of this pregnancy.

The girl seemed remarkably bright and clever. She had no other defect or malformation. The town authorities had tried to help her by supplying artificial hands furnished with hooks, etc. But the child's power of using her own stumps rendered these artifices worse than useless. I tried to see the child again before writing this communication, but I learned that her mother is now dead, and that the girl had been taken to Quarrier's Orphans' Home, at Bridge of Weir.

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## A MODIFICATION IN THE APPARATUS FOR LAVAGE.

BY W. BEATTIE NESBITT, M.B., ETC.

THE following apparatus, with reports of eleven cases, was the basis of some notes given before the Toronto Medical Society, May 7, 1889.

A method of treatment which has been so thoroughly discussed in the ARCHIVES by its able collaborators is sufficiently before the profession for them to judge of its merits. I can-



not too strongly recommend it, as my experience with it has been more than favorable, and it was in order to overcome some slight difficulties and make the operation more readily applicable and manageable that I come to make the following trifling modification in the apparatus previously described by Dr. Seibert in the ARCHIVES. This consists in simply replacing the straight glass tube which connects the stomach-tube with the siphon-bottle by a  $\text{Y}$ -shaped one. To the straight limb (*a*) of the  $\text{Y}$  is attached the catheter or stomach-tube, to one of the other limbs (*b*) the tube from the siphon-bottle, and to the third limb (*c*) a rubber efferent tube for carrying off waste liquid to a pail or other receptacle. I use for a stomach-tube an ordinary Jacques catheter, No. 13, which is of red rubber, and for mnemonic convenience the siphon-tube is of similar material, whereas the waste or efferent tube is of black rubber.

When using the apparatus the tubes to the limbs *b* and *c* of the  $\text{Y}$  are merely placed over the forefinger of the right hand, being retained loosely in the palm by the other fingers. They are thus readily under control of the thumb which can act as a pinch-cock. When it is desired to fill the stomach, the catheter having been introduced, the black or efferent tube is compressed and the fluid then readily flows from the bottle into that organ. The stomach being filled, the red tube is compressed, and the black one now carries off the fluid into a receptacle placed to receive it, and not only carries it off, but on account of its length adds considerably to the siphon-valve.

Instead of the  $\text{Y}$ -tube I am now using a  $\text{U}$ -tube with a limb attached to the curve, as this permits a freer flow and is less likely to be stopped by particles. Either of these tubes can be procured at trifling cost from Messrs. Eimer & Amend, New York.

I consider the first advantage of this plan to be that the whole operation is carried on without the inconvenience of disconnecting the catheter from the siphon every time the stomach is to be filled or emptied.

Second, as mentioned by Dr. Seibert, a small cord of casein may very often stop the eye of the catheter, when he blows into the stomach to dislodge the particle. This discomfoting procedure is entirely done away with in this case, because, supposing the eyelet to become clogged, all that is necessary is to pinch the black tube, as this act at the same time releases the red or stomach-tube from the siphon-bottle, the flow of liquid

into the stomach is immediately re-established, and this serves to dislodge the particle and also tends to break it up. The flow is now closed off by reversing the pressure on the tubes, and the action of emptying the stomach again commences.

I have found that in this way the lavage is accomplished with much less trouble to me and discomfort to the patient. In practising lavage I find it much easier to use a mouth-gag (O'Dwyer's), and after inserting the tube, to place the child on its side with face slightly downward. Just before removing the catheter at termination of the operation, I fill the stomach quite full and then withdraw the tube, leaving the fluid. If the withdrawal of the tube is not sufficient to provoke emesis, this is done by irritation, or rather titillation, of the fauces. In this way I have often seen removed large pieces of coagulated putrid casein half an inch to an inch in length, and of such a tough, leathery consistence that no amount of washing would have broken them up.

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## THE VALUE OF ATROPIA IN ENURESIS.\*

BY R. BRUCE JAMES, M.D.,

New York City.

IN December, 1888, Dr. Simon Baruch read before the New York Academy of Medicine a paper (ARCHIVES OF PEDIATRICS, April, 1889), in which he discussed nocturnal enuresis in children and its treatment, bringing to the notice of the medical profession the great value of the alkaloid atropine in this affection, as evidenced by results obtained in quite a number of cases in which he had used it. But he added that since his cases had not been very long under observation he could not predict the ultimate result to be obtained.

Dr. William Perry Watson, of Jersey City, read before the American Medical Association, at its last meeting, a paper in which he reported in detail thirty unselected cases of enuresis, all cured or greatly benefited by this drug. Prompted or encouraged by such glowing accounts of the virtue of this drug, many of the profession resorted to its use with great confidence and expectation. But a long and faithful trial of it has scored another failure in our search for specifics. For

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\* Read before the Section on Diseases of Children, Nashville, Tenn., May, 1890.

some of us, at least, have found that the number of cases of enuresis cured by atropia, during its administration, is truly great, but the number remaining cured when the drug is stopped is small indeed.

The writer, while resident physician in an Orphan Asylum in this city, had under his charge many cases of enuresis that had resisted belladonna, strychnine, and the other lauded remedies. After hearing Dr. Baruch's paper, he determined to give atropia a trial. Fifteen of the worst cases, among the smaller children, from three and one-half to nine years old, in which no cause for the trouble could be made out, were selected.

Some of them wet themselves alternate nights only, others every night, while a few suffered from diurnal as well as nocturnal enuresis.

In this institution all the smaller children are put to bed at 6 P.M. and made to rise three hours later, at 9 P.M., and urged to urinate.

The following plan of treatment was instituted: I made a solution of atrophia sulphate, of which one teaspoonful represented one-hundredth grain of the drug. Of this solution, for the first night, each child had one teaspoonful at 6 and another at 9 P.M., and this to be increased by one teaspoonful every night till a controlling dose was reached for each case. None of them were benefited by less than four-hundredths grain at night,—i.e., two-hundredths grain at 6 and two-hundredths grain at 9 P.M.,—while others required as much as eight-hundredths grain (divided as above); one case was given as much as one-tenth grain at night without showing symptoms of poisoning.

It may be stated that nothing short of the quantity that produced full physiological effects was of any avail. This point was insisted upon by Dr. Baruch in the paper referred to. After the controlling dose was ascertained for each case, it was repeated every night for about one month, when the drug was withheld altogether. It was found that many of the cases were completely relieved, while others were not benefited. The latter were immediately put on their controlling dose and an attempt made to diminish it, "to taper off," so to speak, but without much success in this, though in no case was it found necessary to increase the original controlling dose, except in one case (XII.) where it lost its effects.

Now, of the cases "completely relieved," the enuresis returned in all, with one exception, in periods ranging from one to six weeks. The case (VIII.) that was cured was a healthy boy but slightly affected. These cases were put on their con-



trolling doses as they relapsed, and an attempt was made to "taper off" with them also, and in some cases a considerable reduction of dose was effected.

These cases were kept under close observation for eight months, during which time many of them would go without the drug, or on reduced doses, from one to four weeks without wetting themselves. But sooner or later the relapse would occur, and at the end of the eight months they were but little better than when we started treatment.

It can be seen how any one, who has not kept a long watch over his patients, could readily arrive at the conclusion that permanent relief had been obtained in most of these cases, especially if he depended on the matron or person in charge of his cases for his information; for after such complete relief afforded by the treatment she is slow to acknowledge a relapse, and it is only after the closest scrutiny and questioning that you can arrive at the actual state of affairs. Such, at least, has been my experience, for not a few of these cases reported here were marked cured in my notes, after questioning the matron carefully; but, visiting the wards myself early in the mornings, I found that such was not the case. No doubt this element in human nature is largely responsible for erroneous conclusions arrived at and published by those who rely too implicitly on the information gained from attendants.

Below is a short report of the fifteen cases, as to age, sex, controlling dose, effect and result of treatment. The doses mentioned were always given half at 6 and half at 9 P.M.

No. 1 may be taken as the typical case; those doing worse or better are the exceptions.

CASE I.—Mary G., nine years. March 2, 1889: Controlling dose six-hundredths grain (three-hundredths grain at 6 and three-hundredths grain at 9 P.M.). May 18, 1889: Has not wet bed for one month; stopped atropia. July 1: Relapsed; atropia resumed. Nothing less than six-hundredths grain will control her for any length of time. October, 1889: Enuresis returned when drug stopped.

CASE II.—Oscar L., six and one-half years. March 2, 1889: Controlling dose nine-hundredths grain (four-hundredths grain at 6 and five-hundredths grain at 9 P.M.). Results similar to Case I., save as to date. October, 1889: Enuresis returned when drug stopped.

CASE III.—Eva R., five and one-half years. Controlling dose eight-hundredths grain. April 22, 1889: Has not wet bed for one month. Gradually diminished dose without return of enuresis. October, 1889: Does not wet bed every night; a great improvement.

CASE IV.—Hannah C., eight years. March 2, 1889: Controlling dose eight-hundredths grain, which produced symptoms of poisoning. Did not lessen dose. Results similar to Case I., except she had longer relief when drug was stopped. October, 1889: Enuresis returned when drug stopped.

CASE V.—Felix H., six years. Controlling dose four-hundredths grain. May 1, 1889: Relief complete; stopped drug. July 1: Wets bed occasionally; drug resumed. October, 1889: Cured completely.

CASE VI.—Pauline P., six and one-half years. March 2, 1889: Controlling dose eight-hundredths grain. April 22: Has not wet bed for one month; atropia stopped. Immediate relapse; atropia resumed. Attempt to reduce dose; no success. October, 1889: Not cured.

CASE VII.—Henry W., seven years. March 2, 1889: Controlling dose six-hundredths grain. May 1, 1889: Relief; gradually diminished dose. July 1: Relapsed; drug resumed. October, 1889: Not cured.

CASE VIII.—Isadore S., seven and one-half years. March 2, 1889: Controlling dose four-hundredths grain. April 22: Relief; stopped drug. October, 1889: Completely cured.

CASE IX.—Maurice S., six and one-half years. Controlling dose four-hundredths grain. Result similar to Case I. October, 1889: Not cured.

CASE X.—Abe S., five and one-half years. Controlling dose eight-hundredths grain. Result similar to Case I. October, 1889: Not cured.

CASE XI.—Sarah R., seven years. Controlling dose four-hundredths grain. Result similar to Case I. October, 1889: Not cured.

CASE XII.—Peter S., seven years. March 2, 1889: Controlling dose four-hundredths grain. May 18: Relief; atropia stopped. June 20: Enuresis returned; put on four-hundredths grain; does not control. Increased to ten-hundredths grain without effect, so stopped drug.

CASE XIII.—Lilly F., three and one-half years. March 2, 1889: Controlling dose four-hundredths grain. May 1: Relief; stopped drug. Partial Relapse. October, 1889: Much benefited.

CASE XIV.—Hattie R., six years. March 2, 1889: Controlling dose, four-hundredths grain. April 22: Relief, but relapsed when drug stopped. Attempt to reduce dose, with little success. October, 1889: Not benefited.

CASE XV.—Rachel E., seven years. March 2, 1889:

Controlling dose six-hundredths grain. April 22: Relief; drug stopped. Relapsed; drug resumed. October, 1889: Not cured.

In only one case did any symptom of poisoning occur, and in this not sufficient to warrant a suspension of the remedy or even a diminution of the dose. Under the long-continued use of the drug, though in such large doses, there were observed no bad effects from it, but, on the contrary, the children, being relieved from the stigma of being "bed-wetters," were brighter and less constrained than when the drug was left off, with the consequent return of the enuresis. It may be well here to state that some of these children, though under the age of five years, were so ashamed of their affliction that, on finding they had wet their beds at night, they would exchange their wet sheets for dry ones from the cots of their slumbering neighbors, thus shifting the coming lecture to innocent shoulders: so great was the effect of the so-called "moral treatment."

As may be seen, every case was absolutely controlled so long as the treatment was kept up, except in one case, where it lost its effects after some months of complete relief, and this from some unknown cause which was never overcome, though the drug was pushed to a dangerous point.

It is a matter of no little regret that, after such a promising beginning, the final result shows such a little gain.

On October 1, after eight months of treatment, of the fifteen cases, two cases were cured, and these mild cases. Two others were benefited, in that they did not wet their beds so often. One it ceased to benefit, while ten showed little or no improvement when the drug was stopped.

I stated that in some of these cases the dose could be diminished after the controlling dose had been continued for some time. Now any long use of this diminished dose would lead to a relapse, and it is more than probable that the length of time before this relapse occurred was but little, if any, greater than it would have been had the drug been withheld entirely, and I am compelled to acknowledge that anything short of the full controlling dose is of little value, though, since the effect of the full dose lasts so long after the drug is stopped, one would suppose that smaller doses would serve to keep up this effect. Such was the principle upon which I worked, but without any great success.

In these cases there could be made out no cause for the trouble. They were all in good health otherwise, their food and hygienic surroundings were all that could be desired. They were allowed no fluid at night, but, under the atropia



treatment, this point was not insisted upon, as it seemed to make no difference whether they had a moderate amount of fluid at supper or not. In short, these cases represented what we often find in private practice, children in seemingly perfectly good health and under good moral training, yet persist in wetting themselves and their beds without any assignable cause.

Now, since the long-continued use of atropia has no ill effect, nor tolerance established that requires an increased dose, and since undoubtedly the vast majority of these cases can be controlled by the drug, we can claim for these children and their mothers a valuable friend in atropia.

When a child is too large to wear diapers, or they cease to be effectual, we can with confidence offer a substitute in the shape of a full dose of atropia, to be repeated every night till the child has outgrown his infirmity, and this point can be tested by having the drug withheld from time to time.

It will be well to add, in conclusion, that many other cases of enuresis were put on atropia, and it controlled them in every case under twelve years of age, and at this writing, April, 1890, thirteen months after the treatment was begun, these children are about as they were last October, receiving their nightly doses of atropia, and improved only as we have a right to expect with the advance in years.

As to those over twelve years old who received this treatment, which were quite a number, can only say they did badly. Cannot recall a case that was benefited in the least, and I fear that children over this age, suffering from enuresis, are subjects of such inherent defects that other drugs or means than atropia must be sought ere they are relieved.

NO. 160 EAST NINETY-SECOND STREET, NEW YORK CITY.

## NEW YORK ACADEMY OF MEDICINE.

## SECTION ON PEDIATRICS.

*Stated Meeting, May 8, 1890.*

L. EMMETT HOLT, M.D., *Chairman*; WALTER LESTER CARR, M.D., *Secretary*.

BLINDNESS FOLLOWING CEREBRO-SPINAL MENINGITIS, WITH  
RECOVERY OF SIGHT IN TWO YEARS.

DR. W. L. STOWELL presented the patient, a child, born in April, 1887; well until March, 1888, then had an attack of cerebro-spinal meningitis, from which he recovered slowly in about six weeks. Before entire recovery it was noticed that he was blind. The doctor saw him in August, 1888, for lobar pneumonia, at which time he was still blind, and there was nystagmus of both eyes. He recovered from the severe attack of lobar pneumonia, in October had a mild attack of measles, and in February had croup. He then remained well until March 16, when a cup of hot tea was spilled on the right shoulder and chest. The next afternoon he had severe convulsions, mostly on the left side, lasting six hours. The next day he was paralyzed on the left side in both upper and lower extremities; slight paralysis of the face, the tongue deviating towards the left. There was some rigidity of the extremities, particularly of the arm and hand, which gradually passed away. It would be observed, therefore, that recovery was taking place from the hemiplegia.

The point of special interest was the fact that, following the meningitis, there was blindness, which Dr. Stowell took to be due to optic neuritis. It having lasted two or three months, there was supposed to be permanent atrophy in the optic nerve, and was so pronounced at the Thirteenth Street Dispensary. Nevertheless, during the past six months the boy had been found to see some, and at present sees well. There is still some nystagmus in the right eye. He sees better on the left than on the right side, and in the right eye the optic disk is yet pale, and shows some evidence of having been atrophied. The boy is bright; the hearing has not apparently been affected. Being asked to what he attributed the recovery, Dr. Stowell said the child received no treatment for the eye-trouble, but after the occurrence of hemiplegia he gave him iodide and bromide of potash. As to

what was the cause of the hemiplegia, he supposed at the time of the burn there occurred hemorrhage on the convexity.

Dr. A. Jacobi said that, until twelve or fifteen years ago, these cases astonished the medical world a good deal, but now it was not so uncommon to see recovery from blindness with apparent atrophy of the optic nerve, or, at least, universal paleness of the retina, and cases like the one presented offered a good deal of encouragement in treatment. He thought the use of strychnia and iodide of potassium would prove beneficial.

CASE OF CONGENITAL STENOSIS OF THE DUODENUM, WITH SPECIMEN.

Dr. J. H. Emerson read the history of the case, that of an infant, born April 24, 1890, after normal labor. It weighed eight pounds and a half, and appeared well until thirty hours old, when it spat up half an ounce or more of dark blood mixed with mucus. There was some choking and blueness of the extremities accompanying the act. This was repeated four or five hours later, and then continued to recur at intervals for eight or nine hours. The nurse stated there had been a trace of reddish stain from the mouth from birth. There was a dark tarry stool. The child evinced no desire for food; there was no evidence of suffering except when raising blood, which caused some gagging; there was no cough, no fever, no disturbance of respiration; nothing found on physical examination of the fauces, etc. Another stool contained only meconium, no blood. Dr. Jacobi saw the patient in consultation. The blood ceased to be ejected. The child refused to nurse, and it was given small quantities of milk and brandy, and after about sixty hours of age it swallowed better. When about three days and a half old it vomited a large quantity of dark-brown, watery, and grumous fluid. Some of this fluid came out now and then until death. The discharges from the bowels had the same character as the earlier ones, but three hours before death they contained some bile. Death at four days and ten hours. Post-mortem showed the stomach markedly dilated, the pyloric orifice two centimetres in diameter, the duodenum markedly distended, but terminating abruptly just above the orifice of the common bile-duct. Fluid could not be forced from the stomach below this point, nor could air be forced upward from the intestine towards the stomach. The stomach contained dark, grumous fluid. The intestines below were normal. In the œsophagus, immediately above the cardiac orifice, was a firm, dark-red, oblong thrombus, two and a half centimetres in length, firmly



attached to the posterior wall of the œsophagus. Other organs were normal. The nature of the process which had given rise to the bleeding could not be made out. The intestines below the constriction were almost completely empty. The case was a very rare one, and he had not found any resembling it in all respects so far as concerned the clot in the œsophagus.

Dr. W. P. Northrup had, not long ago, seen a specimen of congenital stricture of the duodenum, the stricture being located just above the opening of the common bile-duct, the case being a recent one in the practice of an up-town physician. There was a little mucus or meconium in the stomach, which was stained by bile, like that contained in the intestine below, and the question arose as to how the bile could have got into the stomach. It seemed possible that there was a small branch duct going to the stomach, unless it was possible for the green stain to come from the general circulation. Cases of congenital stricture of the duodenum must be very rare, these being the only two cases he had ever seen.

Dr. Caillé had seen a case which was probably the one just mentioned by Dr. Northrup. The physician assured him the infant vomited matter just like the meconium passed from the bowel.

Dr. Seibert said that last fall he made an autopsy for Dr. Sayre on a child which had vomited blood from the day of its birth. He found complete closure of the duodenum by fibrous adhesions from the pancreas. Nothing could pass one way or the other. As to where the hemorrhage had come from, he was unable to say.

Dr. A. Jacobi said there were some cases on record like those related, the constriction being usually at the duodenum, sometimes lower down. He had published one case thirty years ago. Such constrictions might take place in one of two ways; they might occur during early foetal life from duplication of the mucous membrane, especially at the natural divisions of the intestine, in the manner that the hymen was formed. Second, the closure might take place through inflammation, for the tube at this age was very small and little sufficed to occlude it.

#### IMPERFORATE RECTUM.

Dr. Dillon Brown presented a specimen of imperforate rectum in a case operated upon two days ago. The whole perineal and gluteal regions were quite smooth, and there was no sign of an anus whatever, not even a ruga in the skin.

## THE SURGICAL TREATMENT OF ERYSIPELAS.

Dr. Dillon Brown also recited the history of a case of erysipelas in a child (ARCHIVES OF PEDIATRICS, vol. vii. p. 541).

Dr. A. Seibert employed a special scarificator, with one stroke of which several superficial bloody lines could be made beyond the erysipelatous patch, without the use of an anæsthetic. He had employed it on three children last fall with success, and in several cases since then. One was the case of a woman who had rapidly-spreading erysipelas of the face, which was checked at once by a line passing over the forehead and under the jaws.

Dr. W. P. Northrup had seen the spread of the erysipelas stop at the line of scarification in three cases. In one the incisions were made around the arm while the child was asleep, without waking it. In one, in which the arm and fingers were involved, the incisions stopped the upward spread; but the child carried the finger to the chin, a phlegmon developed, and death resulted.

Dr. Willy Meyer regarded the scarification method the best mode of treating erysipelas. One line could be drawn, and if the inflammation showed a tendency to pass that, draw another, and it would be completely checked. He did not think it advisable to introduce a new instrument for this purpose.

Dr. John Dorning had a case of erysipelas below the knee in which he employed scarification, but on the third day the inflammation passed beyond the barrier, went up on the abdomen and down the other leg, yet the child recovered.

Dr. Northrup thought the incisions should not be too superficial, but should extend through the chorion.

Dr. A. Jacobi suggested that the probable cause of the inflammation passing the barrier in Dr. Dorning's case was the fact that the incisions had had time to heal before they were reached,—three days.

## CASE OF DIPHTHERITIC PARALYSIS INVOLVING THE EXTREMITIES AND MOST OF THE RESPIRATORY MUSCLES.

Dr. G. W. Rachel gave a detailed description of such a case. It occurred in a girl aged three years and a half. He was called to see her November 7, 1887, and carried her through a well-marked attack of diphtheria. Eighteen days after he had considered her cured he was told that she stumbled and fell occasionally, and the head dropped forward. When he saw her the head was carried erect, and she seemed well; no albumen in the urine; enjoined rest; gave nux

vomica. December 22 he was called in great haste and told the child was dying of suffocation. He learned that December 20 cough had set in, and the child had been seen tottering, but went on with its play, and nothing further was noticed until the 22d. He found her in bed, with signs of intense agony, peculiar respiratory murmurs, almost blue, unable to move the limbs, turn the body, or raise herself, and unable to speak. Suddenly one of the terrible attacks came on, characterized by rattling in the chest, apparent attempts at coughing, but with no sound except a gurgling in the throat; the tearless eyes stared, the face became livid, there was extreme dyspnoea. The respirations were fifty-two per minute, the respiratory movements limited and peculiar, mostly confined to the lower portion of the chest. The abdomen was drawn upward during inspiration, returned downward quite suddenly on expiration; no dulness over the chest, but numerous râles, mostly large; no bronchial breathing. It was evident the up and down movements of the abdomen were entirely passive, and that the diaphragm was not acting. It was paralyzed, as were also to a large extent the accessory muscles of respiration. He gave strychnine subcutaneously and instituted faradization, placing one pole on the side of the neck in the course of the phrenic nerve, and the other to the under surface of the diaphragm, which was easily done on account of the relaxed state of the abdominal muscles. The abdominal muscles reacted to the faradic current after the fourth day, and on January 23 the patient was considered in perfect health. The paralysis of the muscles of the throat, limbs, respiration, and of the eyes, which had shown a squint, had passed off. The greatest danger in the case had been the accumulation of mucus in the respiratory passages, which was liable to cause pneumonia. The highest temperature during the period of muscular paralysis had been 100.5°. It would be seen that sudden death after diphtheria might be caused not by heart paralysis in all instances, but might sometimes be due to paralysis of the respiratory muscles. In this case the heart beat remained almost normal. Thus it would be seen that, in spite of the close proximity of the cardiac and respiratory centres to each other in the medulla, the one might be affected almost to the point of causing death, while the other remained nearly or quite normal.

Dr. A. Jacobi said these cases were not extremely rare. He had seen some which had recovered, and some again which had died. Therefore, all should be prepared to treat them when they did arise. The treatment which he had recommended in his book was the same as that employed by Dr.



Rachel. He had been compelled to stay by the patient, injecting the strychnine every hour, and using the electricity every fifteen or twenty minutes. In using the electricity, he obtained one good contraction, then waited a minute, and obtained another. For continued use, he thought, would cause exhaustion and asphyxia.

#### THE USE OF ANTIPYRETIC DRUGS IN PNEUMONIA OF INFANCY AND CHILDHOOD.

A general discussion took place on this subject, which was subdivided as follows: Do they (antipyretic drugs) abort the disease? The indications for their use. Contraindications. Choice between quinine, antipyrin, antifebrin, and phenacetin.

Dr. A. Caillé opened the discussion. Regarding the first question, Could antipyretics abort pneumonia? he said there seemed to be an opinion among some physicians that the affection could be aborted, but he did not share it; at least, we had not yet any drug which would accomplish this object. Regarding the second question, he said he had a number of drugs which would reduce the temperature in disease; but did it follow that because a drug would reduce the temperature it should be used? He thought not. If one had a case of pneumonia with moderate symptoms, all he could rationally do to make the patient comfortable was to attend to the action of the bowels, produce healthy action of the skin by means of baths, aid digestion by means of acidulated pepsin, etc. In pursuing this course he would do no harm. If one gave antipyretic drugs every time the temperature reached 102° or 103° F., he thought harm would result. He would be doing what had been called "treating the thermometer." But if the temperature were very high, 105° or 106°, the patient in a state of great unrest, with cerebral symptoms, then the administration of an antipyretic drug which would reduce the temperature for five or six hours would be of benefit.

The contraindications were very simple. Antipyretic drugs were contraindicated in the mild form, and in heart-failure, and their administration by the stomach was contraindicated when this organ was irritable. If there were a high temperature and heart-failure, the former was due to septic poison not being carried off fast enough by the weak heart, and antipyretic drugs were contraindicated, but something could be done by strengthening the heart, as by administering digitalis.

As to choice of remedies, it was true quinine would reduce

the temperature, but it had so disagreeable a taste that it caused an unfriendly feeling on the part of the patient towards the physician, and also damaged the stomach. It had been said also that it depressed the heart. At any rate, there was a better antipyretic. Phenacetin was not soluble in water, capsule or pill, and could not well be administered to children. Besides, it did not reduce the temperature as well as antipyrin. He was not very familiar with antifebrin, and had not been able to satisfy himself that it was safe. One child which received a grain every hour for six hours became extremely blue. Antipyrin, on the other hand, seemed to him a good antipyretic. Two, five, or ten grains, according to the age of the child, given in the afternoon, when the temperature was usually highest, sufficed to reduce it a number of hours, induced a gentle perspiration and feeling of comfort. In special cases other points would have to be considered.

Dr. John Dorning continued the discussion. He thought antipyretics did not abort pneumonia, but there were some conditions which the physician might mistake for commencing pneumonia, and suppose on their cessation that antipyrin had aborted an attack of pneumonia. Nor did he believe the temperature in itself was an indication for an antipyretic. He gave the antipyretic not so much because of the temperature as because of constitutional symptoms, especially those relating to the nervous system. In their administration particular attention should be given the heart, to see that they did not act as cardiac depressants; and, as a safe-guard against this occurrence, he gave at the same time the cardiac stimulant. Regarding quinine, he would throw it out as an antipyretic. Dr. Ripley and he had tested it in the hospital, and had found that it did not act except in a few cases, and in these there was a marked malarial element. It might be given, however, as a heart tonic.

He had found the temperature would rise again sooner after the use of antipyrin than after the use of phenacetin. And he believed phenacetin to be safer: it had not as depressing an effect on the heart. It could be taken floated on a teaspoonful of water. He seldom used antifebrin, having had one case of pneumonia in which he attributed a fatal issue to this drug.

Dr. Joseph E. Winters thought the indications for an antipyretic in pneumonia should be strong in order to justify its use. He found it scarcely ever necessary. More frequently did he find it necessary to recommend its discontinuance in cases in which he had been called in consultation. In some

instances, where an antipyretic had been given for a temperature of 105° or more without effect, a heart stimulant had taken its place with advantage and the patient recovered. The question came to him whether high temperature was more likely to cause death than heart-failure, and, as a rule, he found a stronger indication for treatment in pneumonia in heart-failure than in high temperature. The latter could be counteracted by other means than the use of depressing drugs.

Dr. Dessau thought the danger from high temperature did not consist so much in the likelihood of heart-failure as in convulsions. He thought that in one case he had saved a child's life by three doses of antipyrin of ten grains each. He did not fear heart-failure from sudden rise of the temperature; the danger to the heart was greater from filling up of the lung. He would not think of administering antipyretics unless there was a high temperature, but it should be remembered that some children bore a high temperature better than others, and called for antipyretic drugs not too soon. Then, too, antipyrin acted as much in the way of a nerve sedative in these restless cases as it did in reducing the temperature.

Dr. Joseph O'Dwyer gave little medicine in ordinary croupous pneumonia, for most cases recovered without. Broncho-pneumonia was a much more serious disease, and when the temperature rose very high, he gave an antipyretic, having little choice between antifebrin, antipyrin, and phenacetin. When there was a question of malarial complication, he gave quinine. Yet in the catarrhal pneumonia following measles, pertussis, etc., medication proved of little avail further than to give the patient some comfort.

Dr. Fruitnight thought in supposed cases of aborted pneumonia there was a mistake in diagnosis. When there was hyperpyrexia, he thought a safer remedy than antipyretic drugs was cold water. The contraindications were a tendency to weak heart and any form of cachexia. Their activity and sedative qualities were in the following order: antipyrin, antifebrin, phenacetin, and quinine. But the action of antipyrin was not as prolonged as that of phenacetin, and the greater soothing effect in the case of these two drugs lay with the latter.



## Foreign Correspondence.

### LETTER FROM PARIS.

(Special Correspondence to the ARCHIVES.)

Medical Antisepsia and Scarlatina—Prophylaxis of Whooping-Cough—Alcohol in Children's Diseases—The Etiology of Infantile Paralysis—Paracresotinate of Soda—Narcissus-Pseudo-Narcissus.

*Medical Antisepsia and Scarlatina.*—Professor (*agrégé*) Hutinel was given charge of the Pavillon at the Hôpital des Enfants Malades which is used for the isolation of scarlatina patients, and at once commenced a series of studies to find out the cause of the complications that arise during scarlatina, and for which it is blamed. His ideas and results obtained are so interesting that we give a rapid *résumé* of a late clinical lecture he gave on the subject. Dr. Hutinel first said, "We no longer think that these complications, that take place during certain general diseases, belong to the nature itself of the malady, and that they are inevitable. Certainly the most of them are owing to secondary infections that have as a cause certain pathogenic agents. The micro-organism of scarlatina is not yet isolated, but we now know the germs that are found in the lesions produced by the usual complications of the disease. In nearly all the cases of adenitis, arthritis, nephritis, endocarditis, and pleurisy from scarlatina, the bacteriological examination has shown a streptococcus that is very much like, if it is not the same, as Rosembach's pyogenic streptococcus.

"This is constantly seen in the pharynx as the disease starts, and it certainly plays an important part in the genesis of the inflammations that are seen there, and it is probable that it is owing to these inflammations that it can penetrate into the general economy. If, then, the pharynx is the real point of entry of the germs which are found in the secondary lesions of scarlatina, it is not astonishing to find an exaggerated development of the lymphoid tissues, and, in fact, we find constantly enlarged tonsils, adenoid vegetations, and a general state of subinflammation in all such subjects."

From these facts an important first indication is deduced,—that is, to make a complete and constant disinfection of the throat. Antisepsia of the pharynx is not so easy, however, as children cannot gargle, so that *irrigation* is what Dr. Hutinel used. A large rectal enema pump is used, and considerable quantities of a solution of boric acid at three per cent. in water

was passed several times a day. The water used could be combined with naphthol, chloral, etc., but the only real object is antiseptia, and any substance would do, being careful to provide a separate canula for each child. Besides this, the tonsils and throat were cleaned off with a small cotton tampon on a stick, which was impregnated with boricated glycerin; a few drops of boricated vaseline oil were also instilled into each nostril several times a day. The boricated products seem best for hospital use where there is a slight danger in using the stronger antiseptics, and the results were excellent, as we shall show later on. While believing that the secondary complications are of microbian origin we should not reject clinical facts which have shown so often that cold is an active agent in scarlatinal nephritis, so that these child-patients were also kept warm in bed. As to alimentation, milk is the only food possible, while it acts as an excellent diuretic. Dr. Hutinel showed the importance of sticking to milk diet only in these cases by telling of a patient, of twelve years of age, that had come into the hospital with scarlatina and had been put on strict milk food; but on the next visitors' day the parents managed to steal in some cakes and other food, with the result that the child had albumen in his urine the very next day. Besides the above treatment, isolation is very important and is carried out here carefully.

In thirty-five cases of scarlatina treated in this simple way only one death was recorded. As to complications, six of the children had albuminuria, one with rheumatism, one had pleurisy, one otitis, one diphtheria, but all cured promptly. It would seem from these results that throat irrigation and antiseptia, milk diet, and isolation will be all the treatment needed in scarlatina, and it will prevent the complications so much dreaded.

*Prophylaxis of whooping-cough.*—Professor Ollivier, of the Hôpital des Enfants Malades, is constantly talking on this subject. He first of all showed that whooping-cough has increased very much in Paris, so that in 1889 there were one hundred admitted in his hospital alone, and twenty-five deaths. It is seen with most serious symptoms in the poorer districts and among the laboring classes, who will not accept the principle of isolation even if they can do it, and yet it is so contagious that the moment we see and hear the cough the child should be taken away from its sisters and brothers. We do not know just at what moment the contagion takes place. At the third period of the disease, when the cough becomes better, we are apt to think it is all over, when in reality it is only the worst of it, perhaps not for the patient, but for those around

him; so it is often an exile of two or three months that must be ordered for these patients.

This in face of the fact that most people don't care much what happens to their neighbor's children; and if the doctor say they must not take the child out to the parks and gardens, they reply, "We cannot keep him in prison when the open air is good for him, nor can we take him to the park at midnight so as to be sure he won't hurt the others." This being so, it is for parents, whose children are well, to prevent them from playing or going with those who cough. As to schools, they should send away for a time not only the child that has the whooping-cough, but also his brothers and sisters. As to hospital prophylaxis, there should be a special building for these cases, and, as change of air is important, it ought to be out of town, in the country. This hospital should have schools attached to it so that the children should not lose time from their education during the long period of isolation needed. After reading Dr. Ollivier's report on this question, the Paris City Council adopted the following resolutions, which were ordered to be printed for distribution:

"1. Whooping-cough is very dangerous for children under two years of age, or those older who may be enfeebled from any cause.

"2. This disease is very contagious.

"3. When a case occurs in a family the child must be isolated.

"4. The rooms inhabited by the child must be disinfected the same as for measles, scarlatina, or diphtheria."

*Alcohol in children's diseases.*—We notice somewhat of a reaction in regard to this form of treatment. The medicinal value of spirits is probably overestimated by physicians who so often prescribe wine or cognac in the belief that it would strengthen the constitution of delicate children. This is certainly an error and contrary to all experience. Spirits, coffee, tea, and even chocolate ought to be rigidly excluded from a child's diet. Up to its twelfth to fourteenth year they should get nothing but water, milk, and plain nourishing food with plenty of fresh air.

These simple dietary rules are all the more necessary nowadays, when the nerves of children are so much affected by the prevailing hot-bed system of education, when every further irritant must lead to weakness and disease. Professor Nothnagel lately showed a boy of ten, who was suffering from liver complaint, brought on by regular doses of spirits given to strengthen him.

*The etiology of infantile paralysis.*—Dr. Joffroy, in a late clinical lecture, took up this question. He showed a patient that at the age of one year began to have convulsions, when



its right leg became paralyzed. This was accompanied by muscular atrophy and an arrest of development, so that at present the child has a short, deformed leg which is cold to the touch, violet-colored, and presents some ulcerations caused by the simple contact of its boots. All these signs show the profound perturbations that the spinal cord has been subjected to, losing its trophic power. This is a type of deformity caused by infantile paralysis.

What is the cause of this? Duchenne, of Boulogne, first described infantile paralysis, but could not give its etiology. It was known then that cold during teething, which was preceded or followed by fever, began the trouble, but no cause was given.

Morel and Lucas, then Charcot, at last began to search in the family antecedents for a cause, and Professor Charcot created the "*Neuropathiques*." Féré and M. Déjérine studied heredity in diseases of the nervous system, and showed its importance. In the present patient we find that the maternal grandparent died of some paralytic trouble, not known exactly what. The father had convulsions as a child; he became a policeman and took to drink; was a very violent man. The mother at the menopause fell into a profound melancholic state and was sent to an asylum; a sister is hysterical; so that heredity is plain in the case. Another case was from a first cousin's marriage, and antecedents of hysterical and nervous nature found.

Just as soon as the pathogenic part played by the micro-organism was admitted in certain diseases, many writers tried to identify infantile paralysis with the other maladies caused by microbes, and they started on the principle that infantile paralysis was caused by the action of some pathogenic microbe not yet found; it seemed to these writers to act like most of the microbean diseases, with its sudden fever that came on without any appreciable cause.

But closer study of infantile paralysis shows us that it is often after an attack of measles, near the decline of it, that it comes on, or, again, after scarlatina or rheumatism, bronchopneumonia, and in certain cases even after malarial troubles. There is no reason to admit that infantile paralysis is caused by any one trouble. We know that in pneumonias the stethoscopic sounds do not differ in any of them, and yet they are produced by many different agents, sometimes by the lance-microbe shown by Talamon, or the erysipelococcus of Fehleisen, or the typhoid form of Eberth, and others. It may be the same for infantile paralysis, but whatever the pathogenic element is, it strikes at a point that is already marked out for it by he-

redity. The nervous system, for instance, gives way on account of an original predisposition, this makes it of great importance to search for the family history to get at the *locus minoris resistentiæ*.

*Paracresotinate of soda*.—This new drug is employed by M. Dosunce, of Berne, in children. He claims for it that it is an active and non-toxic antipyretic.

In infants, it is used in doses of .50 centigramme to one gramme per day, given in powders of .10 to .25 at a time, in solution. Besides its antithermic properties, paracresotinate of soda is useful in stopping diarrhoeas in acute gastro-enteric cases in babies. It rarely causes any eruption or vomiting. Its action is like salicylate of soda without any of its congestive phenomena or noise in the ears.

*Narcissus-pseudo-narcissus*.—The old fashioned *Daffodil*, of which the root was formerly much used as an emetic in doses of two drachms, is again brought up by Dr. Huchard, who says that the leaves, flowers, and, above all, the root is very useful in infantile therapeutics; as a vomitive he gives the following formula:

R Pseudo-narcissus flowers, 2 to 3 grammes ;  
Water, 150 grammes.  
Ft. infusion for twenty minutes, and give warm.

Or,

R Pseudo-narcissus root, 3 grammes ;  
Boiling water, 150 grammes ;  
Syr. acasia, 40 grammes.  
Ft. potion.  
Sig.—One dose.

It needs at least five grammes for an adult.

Dr. Huchard says we may be very useful in finding *new* remedies in hunting up the *old* ones.

## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Warden: Deaf-mutism and Marriage between Blood-Relations. (*Arch. f. Kinderh.*, xi. 4.)

The author finds that deaf-mutism is rather more frequent among males than among females. Among 136 mutes there were 75 boys and 65 girls. The following data are taken from his paper: In the northern countries of Europe there are 3 mutes to each 10,000 inhabitants. In Switzerland the relation is 54 to 10,000; in Belgium, 4; in Great Britain, 5; in Denmark, 6; in France, 6; in Spain, 6; in Italy, 7; in Germany, 9; in Austria, 9; in Hungary, 13. In the German states the number of deaf-mutes is greater than that of the blind, while the converse is true in most other localities. In Switzerland there are three times as many mutes as blind; especially are the mutes frequent in the mountain districts, while in the valleys there are more blind. In Bavaria there are few mutes, which is accounted for by the extraordinarily large mortality among infants in this country. The way in which Greeks and Romans treated deaf-mutes is well-known. A Benedictine monk (Pedro Ponce) was the first to attempt the education of deaf-mutes in Spain, in the sixteenth century, while John Bulwer began a similar work in England in 1648. Deafness is a disease which is not necessarily inherited, though deaf parents may have deaf children. If both parents were born deaf it is probable that their children will also be deaf; and if they should marry, there are eighty chances in a hundred that their offspring will be deaf. But if deafness in the parents is due to an accident, and there is no blood-relationship and no scrofula in the case, it is improbable that the children will be deaf. Sometimes deaf parents have healthy offspring, but deafness appears in the next generation or in the one following it. Marriage among blood-relations favors deafness, blindness, mental disease, and great mortality among the offspring which results from such marriage. As causes of mutism, aside from consanguineous marriages, are mentioned fright and violent mental disturbance on the part of the mother during pregnancy. Additional causes are organic defects,



typhoid, measles, small-pox, diphtheria, and scarlet fever, the latter being causes of post-natal deafness. Eye-disease is not seldom accompanied by ear-disease, especially among scrofulous children. The exanthemata, small-pox particularly, may be a cause of coexisting disease of the eyes and ears.

Liebreich was the first to call attention to the simultaneous occurrence of retinitis pigmentosa and deaf-mutism, and draws the following conclusions:

1. Retinitis pigmentosa is of frequent occurrence in deaf-mutes.

2. The simultaneous occurrence of both conditions has been frequently observed among Jewish children.

3. In most children these conditions are associated with near relationship (consanguinity) in their parents.

4. Cerebro-spinal meningitis is also a cause of deafness. Of seventy-seven children in one institution, eighteen had lost their hearing as a result of this disease.

The following points are also considered of interest:

1. If closely-related deaf-mutes marry one another, their children will probably be mutes.

2. If congenital mutes who are not related marry, but have relatives who are mutes, the offspring will probably be mutes also.

3. If those who have become deaf by accident marry, having no relatives who are mutes, their children will probably have no defects as to their hearing.

4. Mutes, either congenital or acquired, who have no relatives who are mutes, can marry persons who also have no relatives who are mutes without the probability of having children who are mutes.

A. F. C.

Mandelstamm: Clinical Observations on the Use of Small Doses of Phosphorus in Rachitis. (*Jahrb. f. Kinderh.*, xxx. 4.)

The following conclusions were reached as the result of this method of treatment:

1. Clinical observations fully justify the use of small doses of phosphorus in rachitis.

2. Phosphorus acts better, quicker, and more safely than any other agent upon the rachitic process.

3. A long-continued use of phosphorus in small doses is well tolerated by children, and there is no disturbance which one would be justified in attributing to its action.

4. Phosphorus acts most happily upon the nervous disorders which accompany rachitis. Such disorders disappear quickly, and the general condition rapidly improves.

5. Periodical measurements and weighings of rachitic children treated with phosphorus, as well as investigation of the condition of the bones, show that under the influence of this agent the rachitic process usually ceases to progress, and the disease gradually disappears.

A. F. C.

Galatti: Lipanine as a Substitute for Cod-Liver Oil. (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

A clinical study with lipanine was made by the author, most of the children to whom it was given suffering with tuberculosis, scrofula, or rachitis. Among twenty-seven cases in which it was used, the results were considered on the whole as very favorable. In general it was easily taken and well tolerated, neither malaise, vomiting, nor diarrhœa following. In all cases the appetite increased after a short time, even though there had previously been complete loss of appetite. As to increase in weight, the results were quite satisfactory, especially in view of the fact that most of the patients, prior to this treatment, had deplorable hygienic surroundings. Notwithstanding the general improvement, the local signs of the tuberculous process did not undergo modification, and in some cases the march of the disease seemed to suffer no arrest. Lipanine may be given pure two or three times daily in dessert-spoonful doses, or combined with a few drops of essence of peppermint or anise. Such a formula as the following is advised.

R Lipanine, 10 grammes;  
Syr. Menth. pip., 50 grammes.  
Sig.—A small spoonful three times daily.

A. F. C.

Moncorvo: The Use of Strophanthus in the Treatment of Disease in Children. (*Rev. Mens. des Mal. de l'Enf.*, February, 1890.)

The author claims the honor of introducing this drug into pediatric practice in 1888, in a paper before the Medical Society of Paris, in which he related the favorable effects produced upon four children with heart-disease by the use of the tincture of strophanthus. Since that time the author has used the drug upon children of all ages between fifteen months and fifteen years. Not the least intolerance for it was manifested by children of any age, and in all cases it augmented the muscular force of the heart, regulating its rhythm without prejudice to the arterial tension which has very often been relieved and always regulated. The dosage in the last series of cases varied between five and eighteen drops in the twenty-

four hours, being taken in three doses. Eight cases were observed of children with mitral lesions manifested by hyposystole accompanied with cardiac arrhythmia, oliguria, and some of the common symptoms in the cardiopathies of childhood, palpitation, præcordial oppression, insomnia, etc. In all these cases there was immediate amelioration after using the strophanthus, and eventually the lesions disappeared wholly or almost wholly. In some cases of asthma the weakened heart-fibre was strengthened by the strophanthus and the rhythm of the contractions regulated, but there was no other apparent influence upon the asthma. In two cases in which there was a profound neuropathic state resulting from dystrophic disease, much benefit was derived. In three cases there was parenchymatous nephritis with or without cardiac lesions. In these the infiltrations disappeared, and there was a return of cardiac energy and a regulation of the rhythm of the contractions. In the pulmonary or broncho-pulmonary affections of childhood, which are so often complicated with cardiac asthenia, strophanthus may render excellent service as a heart tonic. The good effects of this drug persist a long time after its use has been discontinued. It has no well-defined influence upon the central nervous system nor upon the temperature.

A. F. C.

Conrad: The Prophylaxis of Blennorrhœa Neonatorum. (*Archiv. Ital. di Ped.*, January, 1889.)

A brief statistical table is given by the author of blindness which has resulted from blennorrhœa neonatorum. According to Graefe, seventy-five per cent. of the blindness in Saxony results from causes operating during the first days of life. As long ago as 1750 attention was directed by Quelmalz to the etiology of the disease in question, and Gibson long since referred to its prophylaxis, but it was reserved for Crédé to attribute the origin of the disease to the purulent gonorrhœal secretion in the vagina of the mother, by which the conjunctival sac of the infant was infected during parturition. The author's practice has been to apply within the vagina of pregnant women suffering with gonorrhœa a portion of the following mixture:

R   Acidi tannici, 25 grammes;  
      Spts. vin. rectific., 25 grammes;  
      Glycerinæ, 75 grammes;  
      Acidi carbol., 2½ grammes.

This should be used every day or every two days. This treatment will suffice if there is merely a desquamative blen-



norrhœa of the vagina ; but if the form is purulent or gonorrhœal, it is better to make applications of a three- or four-per-cent. solution of nitrate of silver, the vagina having first been cleansed with an injection of plain hot water or a 1 : 4000 solution of sublimate. During parturition the vagina should be irrigated with a solution of sublimate to avoid infection of the eyes of the child. After birth the hands, head, face, and external portions of the eyes should be washed with a two-per-cent. solution of carbolic acid, or, in place of this, plain water may be used in accordance with the suggestion of Bruns. Crédé's plan consists in dropping one drop of a two-per-cent. solution of nitrate of silver in each eye shortly after birth. During the six years in which this plan has been practised at the Maternity Hospital, over which Crédé presides, there have been seven hundred and fourteen births and not a single case of blennorrhœa neonatorum. The silver solution should always be fresh, otherwise its strength will be uncertain. There is seldom any reaction after this treatment, and it is better to apply a compress of three-per-cent. borated cotton after the instillation of the silver solution.

A. F. C.

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## II.—MEDICINE.

Neumann : Hereditary Syphilis. (*Jahrb. f. Kinderh.*, xxx. 1, 2.)

The following questions are proposed :

1. What will be the result if the father and mother are not syphilitic at the time of conception, the mother first becoming infected after conception ?
2. What will be the effect of post-conceptional syphilis on the part of the mother if the father was already syphilitic at the time of marriage ?
3. What will be the effect of post-conceptional syphilis upon the offspring, the health of the father at the time of marriage being unknown, and the mother being well at the time of conception ?
4. How will the offspring be affected if infection and conception occur at the same time ?
5. How will it be with the offspring if the father or mother or both were syphilitic prior to conception ?

Another question might be added,—namely, Does the post-conceptional syphilis of the mother pass to her foetus which was healthy at the time of conception, and if so, in what month of pregnancy does the infection occur ? In respect to this

question Neumann disagrees with the answer of Kassowitz, that the foetus, with a healthy father, could not sustain intra-uterine infection by the post-conceptional syphilis of the mother. Kassowitz himself subsequently modified his opinion in stating that the passage of the syphilitic contagium from mother to child and conversely might occasionally take place, and that then the organism of the foetus, remaining free from syphilis in spite of the placental circulation, would have acquired a high degree of immunity from subsequent syphilitic infection. As to the period of time in pregnancy in which the virus passes from mother to foetus no one has yet offered any satisfactory answer. The statements of Neumann are based upon two hundred and sixty-one cases which were observed in his clinic. Of pure post-conceptional syphilis there were eleven cases; of the eleven children, four remained free from syphilis. The infection of the four mothers in these cases took place in the ninth, seventh, sixth, and fifth month (lunar) of gestation. Two of these mothers had treatment for syphilis during pregnancy; the others did not. The infection of the other mothers, who were delivered of macerated, dead, or syphilitic infants, occurred between the second and eighth lunar months, and of these, two received treatment during pregnancy.

In a second series of fifteen cases, in which the fathers were syphilitic at the time of marriage, the mothers were not infected until pregnancy was established. Of the fifteen children of these mothers, eight were born dead, the mothers having been infected in the second and sixth months; five were born healthy, the mothers being infected between the fourth and ninth months; two were syphilitic, whose mothers were infected in the fourth and fifth months. A third series includes sixteen cases of post-conceptional syphilis in which the conditions of health of the fathers were unknown. Of the sixteen children, three were born dead, their mothers being infected in the second and third months; five healthy, infection taking place in the sixth to eighth month; five premature, infection in the first to fifth month; one syphilitic, whose mother was infected in the fifth month; in two others the time of infection could not be ascertained.

A fourth series included thirty-nine cases in which conception and infection were simultaneous; fourteen of the infants were mature and healthy; twenty-one premature and macerated; four were born alive, but were syphilitic.

In a fifth series of twenty-nine cases, in which the mothers were diseased prior to conception, eight children were mature and healthy at birth; three mature and syphilitic; five were premature; there were thirteen abortions, the foetuses in seven

of them being macerated. The following conclusions were drawn from the entire one hundred and twelve cases :

1. In pure post-conceptional syphilis, infection of the mother in the first months of pregnancy favors disease in the child, but in almost half of all the cases the children are, in fact, healthy. It is therefore certain that the barrier between mother and foetus can be traversed by the syphilitic virus, and that in the last one hundred and twenty days of pregnancy infection of the mother at least endangers the foetus.

2. Even when the syphilitic disease of the father is evident at the time of marriage, and the mother is not infected until subsequently, healthy children may be brought into the world.

3. In the case of post-conceptional syphilis, in which the condition of the father is not known, there is great probability that there will be many instances of purely post-conceptional syphilis in the children.

4. In the cases in which conception and infection took place simultaneously, fifteen out of forty-seven children were born healthy, in spite of the assumption that under such circumstances they ought to be syphilitic.

5. If infection occurs before conception, it is necessary to know how long an interval has elapsed. A long interval of time and mercurial treatment of the parents are favorable conditions for the foetus.

6. The statement is incorrect that tertiary syphilis makes women sterile.

A. F. C.

Stainforth : Varicella Gangrenosa. (*The Lancet*, January 4, 1890.)

This case occurred in a boy aged seventeen months. The vesicular eruption was preceded by about twelve hours with a scarlatina-like rash. On the sixth day the vesicles had dried up into hard black scabs, surrounded by erysipelatous-looking areas. By the tenth day most of the vesicles had been converted into deep circular ulcers, which had a punctured-out appearance, and extended down to the fascia. In the centre of several were ashen-gray sloughs.

Three weeks and a half after the attack the ulcers began to heal. There was no family history of syphilis or tuberculosis.

F. F. Caiger : Two Rapidly Fatal Cases of Diphtheritic Paralysis. (*The Lancet*, December 14, 1889.)

The tendency to complete recovery makes one underestimate the dangers which may underlie cases of diphtheritic paralysis.

The two cases were aged twenty-five and five years respec-



tively. Paretic symptoms were present for about a week before death, yet it was only within the last thirty-six hours that the cases took on a serious aspect, and proved fatal by respiratory paralysis. The symptoms pointing to an affection of the vital functions occurred during the late stage of convalescence,—viz., in the fifth and sixth week, a time when it is more usual to find a form of paralysis mainly characterized by an affection of the spinal nerves supplying the limbs. In both cases the faucial affection was severe, the membrane being very persistent.

This is in accord with the author's experience,—viz., that it is the severe cases which are most frequently followed by subsequent paralysis, the mild ones usually escaping altogether.

Cases of diphtheria which, during the acute stage, present a large amount of mucoid secretion at the back of the larynx, accompanied with rhinorrhœa, are of the most grave kind, the accumulation being due to retention, and these are signs of the oncoming paralysis of deglutition, which quickly becomes associated with laryngeal affection and cardiac or respiratory failure.

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### III.—SURGERY.

Finlay: Intussusception successfully treated by Inflation. (*The Lancet*, November 30, 1890.)

The patient, a child, aged eight years, came under observation with a plainly-marked intussusception.

The diagnosis being perfectly clear, it was decided to try the effect of inflation at once.

Chloroform was administered, and the operation performed with a small pair of ordinary bellows.

The abdomen was somewhat, but not greatly, distended. In two or three minutes the tumor disappeared.

During the following night the boy vomited a few times. The next day there were no abdominal symptoms, and no blood had been passed since the inflation. The bowels moved on the ninth day.

Dixon: Dislocation on to the Dorsum Ilii. (*The Lancet*, November 2, 1889.)

The author reports a case of dislocation of the head of the femur on to the dorsum ilii, occurring in a child six years of age.

The limb was semiflexed, adducted, and rotated inward.

Chloroform was given.

Extension was made by pulling the limb at right angles to the body.

Immediately the bone returned to its place with an audible click.

Farrant, in the *Lancet* of October 12, reports another case of dislocation in the dorsum in a child seven years old. The usual signs were present, and reduction was easily effected by manipulation.

Eve, Frederick: Sub-Hyoid Dermoid Cyst. (*The Lancet*, November 23, 1889.)

A girl, twelve years old, had had for five or six years a fluctuating swelling in the anterior part of the neck. The tumor was not adherent to the skin, and projected between the hyoid and thyroid cartilages in the median line.

The contents consisted of oily matter and crystals of fatty acid. The lining membrane was smooth and resembled mucous membrane, but no microscopic examination was made.

As much as possible was removed, but complete removal was impossible, owing to the narrowness of the chink between the hyoid and thyroid cartilages. The wound healed within a fortnight, and no recurrence took place.

This cyst probably originated by cutting off a small part of the mucous membrane of the respiratory passages, in the closure of the bronchial arches along the middle line.

Eve, Frederick: Left Inguinal Hernia with Myxoma of the Cord. (*The Lancet*, November 30, 1889.)

CASE I.—The child was eighteen months old. He had a congenital inguinal hernia. On reducing the hernia, a distinct tumor was felt just above the testicle. It was punctured, but only a few drops of gelatinous fluid escaped.

An operation was undertaken with the double purpose of curing the hernia and removing the tumor.

Dissection demonstrated that the lower end of the hernial sac terminated in a disk-shaped mass of soft mucous connective tissue, which was unconnected with the testicle.

The tumor, with the hernial sac, was dissected out.

Complete recovery followed.

The tumor on section proved to be a myxoma.

CASE II.—A boy, aged three years, was found to have a congenital hernia. A truss did not cause the hernia to disappear. About one month later a lump formed below the hernia. This nodule was firm and apparently painless, about the size of a filbert, and was situated at the bottom of the hernial sac, between this and the tunica vaginalis.

Operation was refused.

In these cases fatty and myxomatous tumors are occasionally combined. It appears in such cases that hyperplasia of myxomatous tissue takes place, and this subsequently undergoes fatty degeneration.

This may, in a measure, explain the occurrence of lipomata in a tissue—namely, the spermatic cord—usually devoid of fat.

Renton, J. Crawford: Excision of Astragalus in Club-Foot. (*The Lancet*, March 16, 1889.)

The author reports two cases of club-foot with illustrations.

One was a boy, aged seven years, suffering from a relapsed double talipes equino-varus. The child had been operated on when an infant, and the result at that time appeared quite satisfactory.

The astragalus was removed from the left foot by means of an incision from the external malleolus downward and forward. Phelps's operation was performed on the right foot. All the resisting structures in the sole of the foot from without inward were divided. It is now two years since the operation, and the result is satisfactory.

The other patient, two and a half years old, suffered from severe double talipes equino-varus.

Several operations had been performed in this case without good results. The astragalus was excised from both feet. There was an interval of ten days between the two operations. The author recommends Mr. Lund's astragalus hooks as an aid in effecting easy excision of the bone.

These cases show no tendency to relapse and are tributes to the value of the operation of excision of the astragalus in severe club-foot.

Mackenzie, G. Hunter: Spontaneous Disappearance of Laryngeal Growths after Tracheotomy. (*The Lancet*, April 6, 1889.)

The author reports a case to illustrate the fact that the operation of tracheotomy for certain varieties of laryngeal growths in children may be followed by the spontaneous disappearance of the neoplasm and accompanying thickening of structure and complete return of the vocal cords to health:

A boy, aged five years, came under observation for difficult breathing. The trouble dated from an attack of laryngitis during measles a few months previously. The obstruction was situated in the larynx. Tracheotomy was necessary. The child recovered rapidly from the operation, and continued to wear the tube for about a year, during which time there was



laryngoscopic evidence of the presence of inflammatory thickening and warty-looking growths about the glottis. Towards the latter part of this time these gradually disappeared, the vocal cords cleared up entirely, and the tube was permanently withdrawn.

It is now six years since the operation was performed, and during the whole of that time there has been no indication of any tendency to recurrence.

The voice is clear, the cords are healthy in color and outline, the breathing is normal, and the development of the boy is good.

**Mott: Embolic Aneurism.** (*The Lancet*, April 6, 1889.)

At a meeting of the Pathological Society of London, Dr. Mott read a paper on aneurism of the right brachial and ulnar arteries following upon embolism.

The patient was a boy, thirteen years of age, who came under observation for well-marked aortic disease. The case was diagnosed infective endocarditis.

One month later he was suddenly seized with pain and numbness in the right hand and disappearance of the ulnar pulse; a little later the radial pulse also disappeared.

Three months later the patient died. At the necropsy the heart was found enlarged. Huge, calcareous vegetations covered the aortic valves. Many old infarcts were found in the spleen and left kidney. There was found an aneurism of the ulnar artery just below the interosseous branch, and an aneurismal dilatation of the brachial artery at the lower border of the tendon of the *teres major*.

The points of interest in the case were: 1, that it afforded an undoubted example of aneurism following embolism; 2, the case was one of calcified aortic valves.

It was probably infective; hence the ulceration of the vessel walls in this case and that of a case of ulceration and secondary hemorrhage of the popliteal artery after ligature, the wound having become septic.

Microscopical examination showed that the inner coat of the vessel was destroyed at the seat of the aneurism. The remaining walls were infiltrated and separated by immense numbers of leucocytes.

**Beck, Marcus, and Barker, A. E.: Acute Intestinal Obstruction following Peritonitis: Operation: Death.** (*The Lancet*, April 13, 1889.)

Two cases are reported. In both, mechanical obstruction of the small intestine, secondary to peritonitis, was present.

In one case the peritonitis spread from an abscess around a gangrenous vermiform appendix, and the distended intestines were found strangulated by a band. In the other case the peritonitis followed rupture of a caseous iliac gland, and an adherent coil of ileum had become twisted upon itself and mechanically obstructed.

The cases are reported in detail, and a careful analysis of the symptoms presented.

Both cases were treated ultimately by abdominal section, but death resulted in each case.

An account of the necropsy is given in each case.

Aderson, R.: Secondary Hemorrhage from the Popliteal Artery. (*The Lancet*, April 13, 1889.)

The patient was a boy who had his knee crushed between two colliery trains a month previously.

When he came under observation the case was thought to be one of acute suppurative periostitis.

An incision was made and a drainage-tube put in. Some turbid serum and a dark clot came out: no pus.

A week later a profuse arterial hemorrhage occurred from the wound. The patient became blanched, cold, and gasping.

Other means having failed, an intravenous saline solution—two grains of sodium chloride to the ounce—was then injected: eighteen ounces of this were allowed to flow into the median basilic vein with most gratifying results. On the following day the popliteal artery was cut down upon, and found partially ruptured. Both ends were ligated.

Following this the boy passed into an alarming state, and presented similar symptoms to the previous day. Eight ounces of saline solution were again passed into the median basilic vein with striking benefit.

The patient made a good recovery in six weeks.

Cheatle, G. L.: The After-Treatment of Tracheotomy in Diphtheria. (*The Lancet*, June 15, 1889.)

The author divides it into two parts,—general and local.

Under general, every detail in the prevention of exposure at the time of operation is included. Everything should be warmed,—blankets, sponges, tube,—and patient should be at once transferred to a tented bed warmed up to about 70° F., and moistened with steam.

The local treatment is most important. The tube should fit well, and the inner part should slip in and out with ease. The insertion of feathers to keep the tube clean was totally abolished in the author's cases: primarily to avoid irritation,

and secondarily to avoid the tendency to produce or increase inflammation, which would probably be diphtheritic in character.

Two drops of a twenty-grain-to-the-ounce solution of bicarbonate of soda, warmed, were dropped down the tube every half-hour.

This, together with occasional washing of the inner tube, and the catching of expectorated matter by the nurse, to prevent inspiratory effort sucking it back again, were found to be all that was necessary.

The author reports five cases. Tracheotomy was done in all. The treatment adopted resulted in two recoveries out of the five operations.

**Jacobson: Excision and Erosion of the Knee in Children.** (*The Lancet*, June 8, 1889.)

Three patients were shown. All had straight, firmly-ankylosed, and useful limbs.

In addition to strict antisepsis and perfect immobility, the author would lay stress upon these additional points. Every atom of the pulpy material should be removed just as if it were malignant. The dressings should be made at intervals of a week or ten days, and then a little ether may be given, and any suspicious-looking spots treated with a sharp spoon.

That as in children the callous-like uniting material was prone to bend for many years, it was well worth while to straighten with a small osteotome. It was thought also that erosion interfered less with the growth of the limb than excision.

**Walsham, W. J.: Litholapaxy in a Boy.** (*The Lancet*, June 8, 1889.)

The patient, thirteen years old, was suffering from well-marked symptoms of calculus in the bladder.

The stone was estimated by palpation per rectum and by measurement on the handle of the lithotrite to be about an inch and a quarter by three-quarters of an inch in its longest and shortest diameters respectively.

The meatus was incised, and a No. 12 evacuating catheter passed easily. The operation lasted one hour and forty-five minutes. Recovery was perfect.

The author would lay down this rule in deciding between cutting and crushing: On no account should the crushing operation be attempted if after division of the meatus the urethra will not admit a fair-sized evacuating catheter.



Treves, Frederick: Treatment of Scrofulous Glands. (*The Lancet*, May 25, 1889.)

The writer believes that scrofula and tuberculosis are essentially the same. Phthisis, white swelling, scrofulous orchitis, caries of the spine, and strumous adenitis are forms of one pathological condition. So far as glands are concerned the typical change in struma is caseation. It indicates a stage of the process and a period in the development of the disease at which the question of operation can be best considered.

The cheesy mass is in no sense a deposit. It represents the *débris* of a chronic inflammation. It is as much a foreign body as the sequestrum in necrosis, and will in due course excite suppuration in the tissues around and be thus got rid of. Under no circumstances could the caseous mass itself break down into pus.

In the discussion following, Dr. Thompson remarked upon the relation of removal of these enlarged glands to lung-disease. He had not observed any increase in the lung-disease from removal of these enlarged glands. The glands might be removed with benefit to the patient notwithstanding the existence of lung-disease.

Mr. Knight Treves, with an experience of two thousand cases, believed in complete excision; partial operation did more harm than good. He operated on every case if the internal organs were sound, but in no other condition.

He does not altogether give up the use of the scoop, for it is available in cases where the knife could not be employed. In after-treatment, pressure was strongly insisted on.

Mr. Thornton had seen very bad results from poulticing continuously.

Mr. Heath did not favor iodine paint, but has seen good result follow the local application of the Kreuznach bitters.

As to internal remedies, he advocated the use of cod-liver oil. Mr. Heath did not believe in the use of the actual cautery.

Mr. Watson Cheyne thought that other than caseating glands were scrofulous. A gland might be strumous before it was noticeable. As to excising these, he was averse to such very operative interference. He doubted whether the disease could always be adequately removed by operation. In some cases he recommended rest, constitutional treatment, and even injections of pure carbolic acid.

The President of the society mentioned a case of chronic torticollis which was cured by the suppuration of a small gland beneath the muscle, and suggested that in cases of the kind explained it might be desirable to cut down and seek for an irritating strumous gland.

Carter, Eustace G.: A Case of Traumatic Effusion into the Peritoneal Cavity. (*The Lancet*, May 25, 1889.)

A boy fell from a height of forty feet into an unused quarry, alighting at the bottom with his abdomen across a projecting boulder. The patient managed to get out of the quarry and walk a quarter of a mile.

The injuries were a green-stick fracture of the forearm and a small abrasion of the abdomen just below the costal arch and two inches to right of middle line. Palpation and percussion did not show any change in the right hypochondriac region.

On the third day pain in the hepatic region became severe and the whole abdomen became tympanitic and tender. About this time icterus set in and the motions became light colored and clayey. One week after the accident the signs of fluid in the abdominal cavity were present. Paracentesis was done and six pints of dark-green viscid fluid withdrawn. This gave the reaction for biliary acids. There was no blood in it.

The operation was repeated at the end of a week and again the third time. A little fluid again accumulated, but was gradually reabsorbed, and no further tapping was necessary. The author discusses, finally, the probable cause of the symptoms. He speaks of (1) rupture of liver, (2) ruptured gall-bladder, and (3) rupture of a cyst in connection with the liver.

Battle, William H.: The Operative Treatment of Disease affecting more than One Joint. (*The Lancet*, May 18, 1889.)

This paper shows the possibility of obtaining cure of disease affecting more than one joint by means of local treatment, which must, however, frequently be of severe character.

The author has had the opportunity of treating several cases which illustrate this fact, and has given the histories of some selected examples in which the disease commenced in the bone and only secondarily involved the joints.

The general treatment followed in these cases was, in the first place, to carefully ascertain the condition of the internal organs in order to estimate the strength of the patient; secondly, to find out the exact condition of each joint and employ the method of operation best adapted to its recovery. Tonics and stimulants judiciously used were employed. Inunctions of cod-liver oil were found useful.

Amputation was only employed as a last resource, on the failure of other methods of treatment. Locally, after excision, erosion, or incision of a joint, chloride of zinc (gr. xl to ʒi) was applied, and the more permanent antiseptic dressing em-

ployed, with the kind of splint which appeared best adapted to the requirement of the limb.

Much reliance was placed on a record of the temperature in recognizing local extension of mischief.

Makins, G. H.: Intussusception of Small Intestine. (*The Lancet*, May 18, 1889.)

A child, aged four years, began to suffer from vomiting, paroxysmal pain, and constipation. Chloroform was given, and an examination of the abdomen revealed a tumor in the umbilical region. There was at no time tenesmus or bloody mucus in the fæces, and little distention of the abdomen. The abdomen was opened and, after attempt at reduction failed, the tumor, involving about nine inches of ileum, was excised between ligatures and an artificial anus established.

It was suggested that in all cases where a short but careful examination showed that the reduction would be difficult the invagination should be excised and an artificial anus established.

The arguments on which this suggestion was based were (1) the unsatisfactory results obtained, due partly to the prolonged character of the present operation, and partly to the fact that the bowel in fatal cases either remains paralyzed or the intussusception recurred; (2) that where resection resorted to early, instead of a last resource after prolonged attempts at reduction, the operation would be most materially shortened and the patient would have a much better chance of immediate recovery.

Murray, R. W.: Treatment of Cancrum Oris by Excision and Caustics. (*The Lancet*, May 11, 1889.)

The author reports seven cases of cancrum oris treated by completely excising the diseased tissue until bleeding occurred, and then applying strong nitric acid.

Of the seven cases, four recovered completely.

Two of the fatal cases were complicated by extensive pneumonia; the third died from chronic septicæmia.

The author states in this letter that he proposes to try a less extensive excision, followed by the application of corrosive sublimate.

The writer advises giving all food, for the first week, by means of the nasal tube.

Thomas, William: Congenital Absence of Fibulæ. (*The Lancet*, May 4, 1889.)

The child had congenital absence of both fibulæ and also



corresponding parts of the feet,—viz., the outer two metatarsal bones and phalanges. The feet were in a condition of rigid talipes valgus.

Mr. Thomas intended to divide the tendo Achillis, and by a specially constructed apparatus to supply the function of the absent fibula.

Lucas, R. Clement: Acute Necrosis of the Posterior Arch of the Atlas. (*The Lancet*, May 4, 1889.)

A child, aged seven years, had been ill about a fortnight, complaining chiefly of a headache. Four days previously a swelling had been noticed at the nape of the neck. This was fluctuating, situated in the middle line, and about the size of a walnut. The patient had a harassing cough and a temperature range of  $100.5^{\circ}$  to  $103^{\circ}$ .

No physical signs were found in the lungs.

On the fifth day he developed signs of consolidation at the base of the right lung. Three weeks from the beginning of his trouble the abscess in the neck was opened and about two ounces of laudable pus evacuated. The patient improved for a day or two.

Four days after the abscess was opened, cerebro-spinal fluid began to escape freely. The pulmonary trouble began to clear up about this time, but there soon developed signs of meningitis.

He died four weeks from the beginning of his illness.

The necropsy showed that the posterior arch of the atlas was white and bare and the two portions separated by a median fissure.

The meninges of the spinal cords were thickened and congested. On opening the brain there was well-marked basilar meningitis; the choroid plexus was covered with lymph; the ependyma was injected, and there was pus in the posterior corner of the lateral ventricles.

Yates, Peter, and Kingsford, E. C.: Treatment of Cancer of the Oral Cavity by Strong Sublimation Solutions. (*The Lancet*, May 4, 1889.)

The authors of this paper give the histories of three severe cases of this trouble successfully treated by the local application of corrosive sublimate.

The first case, a child three years of age, was treated for a time with fuming nitric acid locally, but without effect. The sloughing continued. A solution of bichloride of mercury (1:500) was then applied. The wound at once began to improve and became cleaner and healthier.

The other cases were treated with the mercury solution twice a day as soon as the child came under observation. The slough was at once cut away and a (1:500) solution of bichloride of mercury put on. The surfaces at once began to improve and lose the sloughing appearance. These recoveries are interesting from the fact that the disease is a very fatal one under the former plans of treatment. The treatment was adopted on the assumption that the disease was due to some micro-organism. The result was certainly encouraging. The rapidity with which the sloughing process was arrested and a healthy action set up was most noticeable. There is necessarily some danger in employing so potent a drug as mercury, and the author suggests that experience will point out some less harmful and equally efficacious remedy. The principle of a local germicide remains the same.

Lunn, J. R.: Empyema. (*The Lancet*, April 13, 1889.)

The author narrated three cases of empyema treated by resection of part of a rib.

The patients were aged three, five, and fifteen years, respectively. All made a perfect recovery.

Lateral curvature of the spine occurred in each case, requiring treatment by the plaster-of-Paris jacket.

The author believes that the eighth or ninth intercostal space exterior to the angle of the scapula is the best place for drainage. A large drainage-tube is inserted. The pleural cavity is washed out with Condyl's fluid in preference to carbolic lotion. The author considers it important to discontinue washing out when the discharge becomes less.

Bishop, C. Stanmore: Spina Bifida. (*The Lancet*, May 4, 1889.)

The author reports in this paper two cases of spina bifida treated by the injection of iodo-glycerin after the method of Morton. The percentage of recoveries under this method is said to be as high as fifty per cent.

The following are given as unfavorable circumstances in cases in which the operation may be undertaken: Distinct evidence of the presence of the cord in the sac; a very thin membranous or ulcerated sac; previous rupture; occurrence of a distinct impulse between the tumor and the anterior fontanelle, or easy return of the contents of the tumor into the spinal canal; the performance of the injection in the case of very young children.

The first child treated was fourteen days old. Three injections were made at different times. From ten to twenty

minims of the fluid were used each time. The tumor gradually grew smaller, and the child did perfectly well.

The second child was ten days old. It was in a weak, miserable condition when it was put under treatment. One injection of fifteen minims was used. The tumor remained unchanged. The child died five days later.

In a future case the author says he would prefer to inject a smaller amount of the iodo-glycerin. Bromide of potassium was injected into the rectum in the first case, but was followed by alarming symptoms, and therefore omitted in the second case.

Allen, T. W., Jr.: A Case of Triple Amputation: Recovery. (*The Lancet*, April 13, 1889.)

The boy was run over by a locomotive. The right leg, left foot, and left forearm were hopelessly crushed. There was also a compound fracture of the second and third metacarpal bones and three scalp wounds. When brought to the hospital the boy was suffering from shock and hemorrhage. Chloroform was at once administered and amputations in succession were performed at the left elbow-joint, at the upper third of the right leg, and a Syme's of the left foot. The whole operation lasted thirty minutes. For the first week the effects of shock and hemorrhage were very marked. The case was one of uninterrupted recovery.

Henston: Arthrectomy or Erosion of Knee-Joint. (*The Lancet*, June 29, 1889.)

Mr. Henston exhibited two patients on whom he had performed the operation and mentioned a third still under treatment. The incision was made across the ligamentum patellæ in a crescentic manner. Scissors and scoop were used to remove the diseased cartilage and synovial membrane. Drainage was made from the popliteal space. Primary union was obtained in each case. Recovery seemed complete in these cases. In the discussion following it was thought that time enough had not elapsed to test the value of this operation. Many cases returned in six months for excision or amputation.

Sisley, R.: A Case of Intussusception, with a Recurrence Four Months Later. (*The Lancet*, June 29, 1889.)

Dr. Sisley reports a case of intussusception recently under the care of Dr. Dickinson. This case is interesting because of the success following the injection of water into the rectum.

Attention is called to the fact that the value of injections—



either fluid or air—depends upon the stage of the disease and the care with which it is done.

This patient was four months old. It was not until forty-eight hours had elapsed from the onset that the tumor per rectum was discovered. A water injection was freely used. The tumor disappeared and the child immediately went to sleep. Four months later there was a recurrence of the intussusception, and similar treatment was followed by recovery.

In the remarks on the case, attention is called to the diagnostic value of sudden onset, vomiting, and the passage of blood and mucus, youth of patient, and presence of an abdominal tumor. The apparatus used was a simple irrigator. In this way a continuous and equable pressure is obtained. This is not the case when a syringe is used.

The writer recommends that this method be first tried in all cases in which the diagnosis is certain, if they are still in the early stages. It is obviously useless when adhesions have formed.

Renton, J. Crawford: Notes on Cases of Club-Foot and of Hernia. (*Glasgow Med. Journ.*, May, 1889.)

Five operations for club-foot upon three patients are reported: one by removal of a wedge from the tarsus, three by excision of the astragalus, and one by Phelps's method. The results as shown by illustrations are all good.

Operations for inguinal hernia were performed upon three infants. In the first the sac was not opened. Silver stitches were passed through pillars and sac. There was no return of the hernia. The same method was adopted in the second, but Spanton's operation became necessary four months later. Two years later there was a slight return, but it was easily kept reduced by a truss. The operation in the third case was similar to the first. Partial returns took place, and Buchanan's operation was performed one year later, with good results.

Davidson, Alexander: Genital Irritation in Boys. (*The Practitioner*, May, 1889.)

Neglected personal hygiene in male infants is the cause of much moral and physical decrepitude. The prepuce being as a rule long, the meatus urinarius is concealed, and even under satisfactory conditions some of the urine is retained. Usually healthy urine will lead to no great evil; but the acid dyspepsia to which infants are so subject, with the acid urine, sooner or later causes genital irritation. The mucous membrane and glands are unnaturally excited, while secretion increases and may be pent up by adhesions. The child naturally attempts

to relieve this irritation by rubbing or pulling at the prepuce. The habit of manipulation, if not checked, may persist long after the removal of the irritation. After a certain age this habit is essentially immoral, but during infancy and early childhood it is purely physical.

Eight cases of phimosis and genital irritation in infants are reported. Enuresis, masturbation, nervousness, rickets, and malnutrition were prominent symptoms. Circumcision was performed in each case. In several instances the prepuce was firmly adherent and its separation left the glans raw and bleeding. The results were uniformly satisfactory.

Three conclusions were drawn: (1) Serious health disturbances coexisted with genital irritation. These may be summarized as nutritional, motor, and psychical impairment, and the acquirement of a habit which aggravates these results, and becomes a cause of moral degradation in the near future. (2) The disturbances ceased coincidentally with removal of the irritation. (3) The method adopted was safe and unobjectionable.

**Battle: Ectopion of the Cæcum with Other Malformations, and Prolapse of the Small Intestine through the Ileo-Cæcal Valve.** (*British Med. Journ.*, May 25, 1889.)

The child was first seen when twelve hours old. The umbilical cord was attached to a large hernia covered by tissue resembling that of the cord. Below the pubes was a small red body covered with mucous membrane, which could be pushed up along the vagina. Fæculent matter passed from an opening in this body, which soon became prolapsed several inches. Attempts at reduction having failed, an incision was made into the abdomen and the gut reduced by traction from above. Straining and crying at once ceased, but the child died suddenly two days later.

The autopsy showed that the large intestine led by a periviscous cord into a dilated *cul-de-sac* in the hollow of the sacrum. The right kidney and ureter were absent, but the left kidney was very large. The bladder and uterus were very small; there was no urethral opening visible before death, but a urethra was found.

**Lane, Arbuthnot: Pott's Paraplegia: Resection of Laminae: Recovery.** (*British Med. Journ.*, April 2, 1889.)

The patient was a boy aged seven years. There was a history of phthisis in the family of both father and mother. Deformity was first noticed thirteen months before the operation, but was unaccompanied by pain and tenderness. On admis-

sion a very abrupt curve was found in the dorsal region just above its centre with marked rotation. Voluntary motion of the legs was impossible. There was no plantar reflex, nor ankle clonus, but knee reflex was exaggerated. On gradual extension the muscles of the whole leg became suddenly violently contracted. The patient experienced no discomfort from this spasm.

Immediate operation was decided upon. The soft parts were rapidly removed and the spinous processes and laminæ of the fourth, fifth, and sixth dorsal vertebræ were removed with forceps. The dura mater was exposed, but no granulation or cicatricial tissue was seen. The body of the fifth vertebra was abnormally near the laminæ of the adjoining vertebræ, and the cord seemed to be compressed between these bony points. A small drainage-tube was fastened into the lower end of the wound and a dressing of alembroth wool applied. The dressing was changed on the following day and the tube removed, but no further change of dressing was required.

On the second day spasmodic contraction of the leg-muscles had disappeared, and on the fourth day the legs could be slightly moved. One month later the legs could be freely moved and sensation was markedly improved. A paraplastic jacket was soon to be applied.

Smith, Noble: Hip-Joint Disease. (*The Lancet*, February 16, 1889.)

Recent discussions upon the treatment of hip-joint disease have given prominence to several important points:

1. *Excision in advanced stages.*—As to the desirability of the operation when all other measures have been efficiently applied and have failed, there can be but little doubt. The question hinges rather upon what that efficient application of other measures consists in. The application of an elaborate splint is not a certain proof that the joint has been properly fixed, and without absolute fixation the treatment by rest is not being properly carried out. While pain exists it may be taken for granted that rest is not perfect. The ultimate results of excision seem not much, if any, better than ankylosis after prolonged rest.

2. *Excision in the early stages.*—The necessity for this operation is founded on the following hypothesis: That hip-joint disease is a tubercular affection, and the object of early excision is the ridding of the patient of the focus of tuberculization. It has not been proved that every case is the result of a tubercular deposit. On the other hand, numerous fatal cases are reported in which death was due to tubercular disease



some time after the operation, and not as a consequence of it. The rest treatment, thoroughly carried out, tends to show that general tuberculosis does not necessarily follow disease of the hip-joint. The statement of Mr. Wright, that the vast majority of cases, if taken in time, can be cured without any operation whatever, probably expresses the views of a majority of surgeons who have seen much of the disease.

3. *Operative treatment other than excision.*—The operation of bone-drilling, in the author's experience, has proved to be one of great value. It should be performed in every case where, after the result of fixation is determined, the joint is painful upon gentle pressure. If the parts are also hot and swollen, the need is greater and the good results more marked. The plan pursued consists in puncture with a scalpel to the bone, division of the periosteum for half an inch, drilling for half an inch or more into the bone, and syringing out the parts with a solution of carbolic acid. The point of operation is the trochanter, two openings being made an inch and a half apart with a one-eighth of an inch drill. The subsequent treatment of the wound depends upon the condition of the parts, but usually it may be closed at once. Drilling with absolute fixation has, in most cases, produced an almost immediate and permanent benefit.

**Pitts: Median Hairlip.** (*The Lancet*, March 23, 1889.)

At a meeting of the Medical Society, Mr. Bernard Pitts showed a case of median hairlip. The pre-maxilla was centrally grooved, but the bone was otherwise perfect. There was a small tubercle to be observed at the extremity of the lip cleft. There was no cleft in the palate. The condition is extremely rare. Some authors have denied its existence altogether.

**Morgan: Compound Comminuted Fracture of the Skull: Abscess of the Brain: Secondary Operation: Recovery.** (*The Lancet*, March 9, 1889.)

At a meeting of the Medical Society of London, Mr. Morgan related a case of compound comminuted fracture of the skull, with an abscess in the motor area of the brain, treated by operation, and leading to a successful result. It occurred in a boy nine and a half years of age. When the patient was brought to the hospital, there was a scalp-wound in the right parietal region, exposing a small portion of bone, but no fissure could be seen. On the fourth day a fit occurred, followed by paralysis of the left arm and leg. On stripping off the scalp, a piece of bone was found driven into the brain at a distance

of one and one-half inches from the original scalp-wound. This was elevated, and an abscess which existed in the ascending parietal convolution was emptied and its margins scraped. Power began to return on the second day, and the fits ceased on the fourth day. At one time the granulations threatened hernia cerebri, but they subsided under the liberal use of iodoform. The boy is now perfectly well. The points of interest in this case are: the distance of the depressed bone from the wound; the freedom with which the abscess was successfully treated; and the yielding of the exuberant granulations to a powerful antiseptic.

**Pye-Smith, R. J.: Acute Intestinal Obstruction due to Meckel's Diverticulum.** (*The Lancet*, March 9, 1889.)

The author reports a case of acute intestinal obstruction occurring in a healthy boy, aged thirteen years.

Laparotomy was done on the fourth day. It was found that the obstruction was due to a fish-bone, which had lodged in a constriction produced by a Meckel's diverticulum. The disposition of the diverticulum was unique. It first passed through a hole in the mesentery, then encircled the bowel, and was attached to the mesentery half an inch above the opening through which the diverticulum passed. The case is unusually complete, inasmuch as the immediate exciting cause of obstruction was made manifest in the discovery of the fish-fin in the first motion passed after operation. The diverticulum had so constricted the ileum that its diameter must have been about two-thirds of an inch. Probably this condition had existed for years; but as soon as he swallowed some indigestible material of greater length than the diameter of the grasped ileum, obstruction occurred. The author calls attention to the fact that these diverticula seem to be responsible for about one-tenth of all cases of acute intestinal obstruction, exclusive of intussusception and external hernia. Attention is called to the symptom of very marked peristaltic movement of the coils of small intestine visible before operation. Dr. Fagge was the first to point out the dependence of this sign on hypertrophy of the bowel caused by chronic partial obstruction. The method of examining the intestine is described. It is recommended to start at the cæcum and trace upward, and not to remove the intestines from the peritoneal cavity unless necessary. The author discusses the treatment of the diverticulum itself. The advantages of excision and its dangers are given. The conclusion is that the tendency should be, as with hernia operations, to make the cure as thorough as possible, and as seems safe in each individual case.

**Browne, Lennox:** Congenital Growth of Larynx. (*The Lancet*, March 9, 1889.)

At a meeting of the Pathological Society of London, Mr. Browne exhibited the larynx of a child aged three years, who had been since birth the subject of neoplasm, which had blocked the glottis to such an extent as to threaten asphyxia. Intubation was attempted, but, causing hemorrhage, tracheotomy was promptly performed. Active bleeding took place twenty-four hours later, and death occurred forty hours after the operation. The necropsy demonstrated that the first hemorrhage had occurred from an abrasion of the growth on the right vocal cord by the intubation instrument, and that the later ones were due to the circumstance that the lungs had never been properly expanded, being no larger than those of a newly-born child, and that the tissues had given way under the suddenly increased volume of air afforded through the tracheotomy-tube. The case was deemed interesting in presenting a hitherto unrecorded danger of tracheotomy in cases of congenital laryngeal obstruction, and also as pointing to a risk in performing intubation in cases of laryngeal growths. The growth was a true papilloma.

**Herringham:** Infantile Paralysis of the Arm. (*The Lancet*, March 2, 1889.)

At a meeting of the Medical Society, Dr. Herringham showed a girl aged thirteen years with old infantile palsy of the left arm. The muscles affected were those of the shoulder and arm, except the flexors of the elbow and the extensors of the wrist and fingers. This case was presented as an exception to the plan that this disease showed distribution of paralysis according to function. The author thought the exceptions to this plan were more numerous than were supposed. The muscles in this case were paralyzed rather according to their geography than according to their functional co-operation.

**Fleming, W. J.:** Treatment of Spinal Disease by Elastic Extension. (*Glasgow Med. Journ.*, May, 1889.)

For disease of the spine in the cervical region the author uses an inflating india-rubber collar devised by him.

Elastic extension is applied by means of a weight attached to the centre posteriorly of a pelvic girdle, the counter-extension being obtained by an elastic band passing from a head-girdle to the head of the bed. The weight is attached to a cord passing over a pulley at the foot of the bed, and should be about six pounds for a child. In cases of caries it is advised that, after extension, a paraplastic jacket be worn in the daytime, with extension at night for months.



**Pollard: Strangulated Ovarian Hernia in an Infant: Operation: Recovery.** (*The Lancet*, July 27, 1889.)

The author of this report is not aware that a similar case has ever been reported. The child was three months old. There was a history of a lump in the groin, which would disappear and then return. A truss was applied. The next day, when it was removed to wash the child, an irreducible swelling was found in the right groin. Three days later the tumors became dull on percussion, felt elastic, and the skin became red and hot.

A strangulated ovarian hernia was diagnosticated; for the symptoms during the previous three days were such as to exclude a strangulated intestinal hernia.

The sac was opened, and found to contain an ovary and the fimbriated extremity of a Fallopian tube; they were both greatly swollen, black or gray in color, and in places coated with lymph. It was not thought advisable to return them to the abdominal cavity, so the sac and its contents were mopped over with a one in five hundred solution of perchloride of mercury, the pedicle was drawn down, transfixed, and tied in two pieces with a silk ligature, and the pedicle was returned within the abdomen. The neck of the sac was tied with a silk ligature, and the body of the sac was excised. The pillars of the ring were sutured with silk.

No provision was made for drainage. The wound healed by first intention. The stitches were removed on the seventh day.

The author was in doubt as to how the case should be dealt with, but subsequent examination of the ovary proved that the treatment adopted was probably the best.

**Money: Fulminating Pyo-Hæmothorax in an Infant.** (*The Lancet*, August 31, 1889.)

The patient was aged eight months. She had suffered from a catarrh for four or five days before the onset of symptoms. There were sudden invasions marked by breathing of 56 to 72 per minute and labored; temperature, 104.5°; lips pale and blue; pulse, 168.

The right side and back were harder than the left. There were dulness, tubular breathing, and sharp râles.

Dulness marked; pulse and breathing increased in frequency. The child screamed at the slightest touch, and especially when lifted up in such a way as to stretch the trunk.

Later, when the child had become very bad, twelve ounces of sanguinolent serum were withdrawn. Improvement followed, but she soon grew worse again, and it was evident upon

physical examination that air had gained access to the pleura, and that the lung had not expanded. The aspirator was again used with marked temporary relief.

The next day the chest was opened and with great benefit. A day later the symptoms grew worse and the child died.

At the necropsy no tuberculosis was found. The lower lobe of the left lung was consolidated; the right lung was much reduced in size and occupied the groove by the side of the vertebræ. It was hard and collapsed in the upper part, but friable and evidently pneumonic in its lower half.

On section, muco-pus was seen in the tubes and several small collections in the periphery of the consolidated lower lobe. One of these was in direct communication with the pleuræ by means of a widely patent fistula. The whole of the pleura was lined with a grayish-yellow lymph, and the subcutaneous and muscular tissues of the thoracic wall were infiltrated with a sanguinolent serum.

The development of the case was most probably this: After a catarrh a severe broncho-pneumonia set in, and in places proceeded to the formation of small abscesses; one of these burst into the pleura and set up pyo-hæmothorax of fulminating intensity. Relief naturally followed the removal of the positive intrathoracic pressure, but the bronchial fistula in the lung allowed of the development of a pneumothorax of such severity as to jeopardize life by its intrathoracic pressure on the mediastinal contents.

**Addenbrooke: Foreign Body in the Sacculus Laryngis: Successful Removal.** (*The Lancet*, July 12, 1889).

A child, six years of age, suddenly swallowed a large bead and became suffocated, remaining so a few seconds, and then her breathing became easier.

The child suffered from occasional choking fits, paroxysmal coughing, with much dyspnoea.

Tracheotomy was performed, but the bead could not be found.

Under chloroform the child was inverted and succussed, but without result.

During one of the attacks she fell back apparently dead, but gradually regained consciousness after artificial respiration had been practised.

Chloroform was again administered and a probe passed up towards the sacculus laryngis, where a hard body was felt. The wound was enlarged and the bead removed with a vectis. Recovery prompt.

TRANSACTIONS  
OF THE  
AMERICAN PEDIATRIC SOCIETY,

HELD IN NEW YORK CITY, JUNE 3 AND 4, 1890.

(Continued from page 638.)

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A CASE OF EMPYEMA WITH EXPECTORATION  
OF PUS: THORACOCENTESIS.

BY J. HENRY FRUITNIGHT, M.D.,

New York.

IN the latter half of the month of August and the first weeks of September, 1889, Maggie K., aged seven years and ten months, passed through an attack of illness, exhibiting a complex of symptoms which included an irregular type of fever with exacerbations, accompanied by the so-called abdominal group of symptoms, tympanites, tenderness in the right iliac fossa, and ochre-colored diarrhœa. In the course of her sickness an attack of intestinal hemorrhage also occurred. The *tout-ensemble* of her symptoms predicated the conclusion that her illness was typhoid fever.

By the middle of September she was discharged as convalescent. For a period of several weeks thereafter, as the mother informs me, there was a steady gain and improvement in the child's condition generally.

About the beginning of November, however, the girl commenced to fail. The mother noticed that the child coughed, was feverish, and lost both in appetite and flesh.

About the 25th of November I was summoned to see the patient. On physical examination of the chest, I discovered the presence of an effusion in the left pleural cavity, presumably purulent. The physical signs of a pleuritis were also present,



besides, the heart was crowded far over into the right thorax, and at the same time there existed a marked curvature of the spine to the right. The effusion seemed to extend up about two-thirds of the distance from apex to base. Of course dyspnoea was marked. Thoracocentesis was advised, but the parents objected, and I declined to treat the patient in any other way. On the 27th of the month I was again called, because the child had expectorated pus. When I saw her on this day she was weaker and in a less promising condition than on the previous day. She had expectorated very much pus during the night and morning, and the purulent character of the expectoration still continued. I again advised the operation and suggested a consultation. Later in the day, Dr. J. Lewis Smith saw the patient, who coincided in the opinion that an empyema had ruptured into a bronchus and through the pulmonary tissue, thus finding its way out of the chest by means of expectoration. The doctor also held out thoracocentesis as the only chance for the patient's recovery. Hereupon the assent of the parents to the operation was obtained.

Accordingly, on the following day, in the presence of my colleague, Dr. Charles E. Young, thoracocentesis was performed. In order to be positive of the location of the pus, aspiration under rigid antiseptic precautions was made at the first intercostal space, below the angle of the scapula on the affected side, which demonstrated the presence there of dirty grayish pus. A hypodermic injection of muriate of cocaine was now made over the seat of operation, which was shortly afterwards followed by a free incision an inch and a half in length. Immediately a very large volume of pus welled up out of the wound and continued to flow freely for a considerable time. Upon its cessation a rubber drainage-tube was inserted through the wound into the pleural cavity, which was then irrigated with two quarts of a solution of the bichloride of mercury of the strength of 1 to 10,000. The wound was then dressed with ten-per-cent. moist iodoform gauze and the chest bandaged. These dressings were at first removed daily, for they became saturated with the purulent discharge from the thorax. Later on they were changed less frequently according to the copiousness of the drainage from the chest. The drainage-tube remained

*in situ* until the 20th of February, when it was removed. While the tube was *in situ*, intrathoracic irrigation was made only occasionally, at first at about every fourth day, later once weekly, with the bichloride solution already alluded to. The quantity of pus drained away gradually diminished from the time of operation to the time of withdrawal of the drainage-tube, and the same is to be said in regard to the purulent expectoration, while *pari passu* there was a corresponding gain in the general health and condition of the patient. For about a week before the withdrawal of the tube there was an apparent increase of the amount of pus, and I was in fear that the empyema was getting worse, but, after careful consideration, I came to the conclusion that the tube itself was the cause of irritation, and the gradual diminution of the discharge after its removal verified the suspicion that it was the offender. It is of course understood that the appropriate medicinal and hygienic measures of treatment participated in the treatment of the case. After the removal of the tube the wound in the chest wall rapidly healed under iodoform gauze with firm bandaging and antiseptic washes repeated at stated intervals of several days. Whenever the drainage-tube was exposed and the patient coughed or cried, or made any violent expulsive effort, the pus, charged with bubbles of air, would be forced out of the free extremity of the tube, accompanied by the characteristic hissing sound of air when passing through a tubular vent. I took advantage of this phenomenon to decide when the cavity was free from pus, for when, in the last week of the presence of the tube in the chest, no bubbles of air appeared at the outlet, when the patient made such violent expulsive efforts, I drew the inference that the thorax had been evacuated.

After having passed through such a prolonged and severe illness, the condition of the patient is to-day excellent. The patient is before you, and you will observe that there resulted scarcely any retraction of the affected half of the thorax, that there is no deviation of the spinal column, and that the collapse of lung-tissue is hardly to be appreciated, for pulmonary expansion and respiratory movement are to all intents and purposes about normal. In consequence of the contraction of the chest the cicatrix has deflected considerably to the left of the point

which the incision bore in relation to the angle of the scapula when it was made.

The case offers several points for comment. First, inasmuch as the attack of empyema occurred not so very long after the attack of typhoid fever, the former may reasonably be assumed to stand in the relation of a sequela to the latter.

Secondly, the rupture through the lung and bronchus is the most interesting feature of the history, for it is not of very common experience. Indeed, authors allude to it as occurring but very occasionally, and are apt to lend a sombre tinge to the prognosis in these cases. That may have been so years ago. It seems to me that their occurrence will be even more infrequent in the future than in the past, for if the case comes early enough under observation and the diagnosis be established, thoracocentesis will have been advised and performed long before such an effort of nature to evacuate the pus from the cavity of the thorax should come to maturity. It would not have been present in this case if it had been seen and operated upon earlier in its course.

In this connection I will also say that in all probability an inflammatory state of the lung-tissue coexisted at and about the point of rupture through that viscus. Physically this could not be determined, as the intervening body of pus interfered somewhat with the transmission of pure pulmonary sounds. But as it has been demonstrated to be present in other cases of this character, it is but fair to assume that this complicating pneumonia was also present in the case in question.

Thirdly, it is always to be recommended to aspirate before making the final incision, in order to be sure that such incision will enter the pus-cavity and allow of drainage, for cases have been reported in which incision had been made, as was thought, sufficiently low to allow of drainage on the general surgical principle of cutting at the most dependent point of suppuration, and yet no pus appeared, though subsequent events in the history of the case proved that, had the incision been made at another point, drainage would have been secured. In the first volume of *Transactions* of this body, Dr. Meigs speaks of a case in which the incision was made too low down for the thorough drainage of the cavity, after the healing process commenced.



For these reasons, then, it is preferable to aspirate first, and that not too low down before the radical incision is made.

And lastly, the case was treated in accordance with the generally expressed opinion of this Society in its discussion of this subject at its meeting in Washington in 1889,—viz., that irrigations of the pleural cavity should be done but *infrequently*, and should not be practised as a constant or routine measure of treatment.

DISCUSSION OF PAPERS ON EMPYEMA BY DRS. KOPLIK  
AND FRUITNIGHT.

DR. CARR.—One point in connection with Dr. Fruitnight's case has interested me in particular. It bears on the question raised by Dr. O'Dwyer last year as to the expansion of the thorax after opening the chest. Dr. Fruitnight noticed that, during the expiratory effort connected with cough, pus was forced from the pleural cavity out through the opening in the chest wall. This case, I think, confirms O'Dwyer's investigations reported last year.

The question of treatment in these cases without irrigation is also receiving consideration in this city. The method has been used in Boston, but not so much here. Latterly, in the service of Dr. Poore, at St. Mary's Hospital, the cavity has not been washed out at all, except in rare instances. A drainage-tube is inserted, and antiseptic dressings are applied, which are changed frequently enough to keep the child comfortable and to absorb the discharges. The children improve rapidly, and do not have the rise of temperature and somewhat tedious convalescence which is noticed after the cavity has been washed out.

I think the Society is to be congratulated on Dr. Koplik's paper, for very few of us have had opportunity to make such investigations even were we competent.

DR. KOPLIK.—With regard to the case of Dr. Fruitnight, it is a very rare one, and corresponds to those of which Fraenkel, I think, has published one or two, where perforation took place into the lung with expectoration of pus, resulting in recovery. Cases of spontaneous absorption, partial or complete, of empyemas show that the pneumococcus even from the pleura can be taken up just as a consolidation of the lung from pneumonia and annihilated by the natural fluids of the system. With regard to my experiments on animals, they will be published later, but they correspond exactly to those of Fraenkel and Weichselbaum.

## SOME MANIFESTATIONS OF RACHITIS NOT ALWAYS ASSOCIATED WITH SEVERE BONE CHANGES.

BY WALTER LESTER CARR, M.D.,

New York.

IN the study of disease it is customary to take severe cases and to consider the symptoms shown in a progressive order as being the regular manifestations of pathological conditions. If we find a variation from these symptoms, we still take the original classification as a standard, and view the disease as atypical or abortive. With the disorders of children, however, numerous exceptions must be made, because they are frequently derangements of nutrition which, if rectified, are not productive of serious evil or of lasting pathological changes. In infancy there is great activity of protoplasm. The function of the cells is comparatively simple, being primarily one of absorption. The lymphatic system conveys nutritive material to all parts of the body, and there is not the same physio-chemical power of digestion that is observed after dentition.

Naturally the infant should have mother's milk, and the digestive apparatus is fitted for its assimilation. The milk is a fine emulsion of fat, and as such is quickly taken up by the lymphatic- and blood-vessels through the metabolic activity of the cells covering the intestinal walls. Thus it soon enters the circulation, and is used in the economy for the necessary functions of heat-production and tissue-growth. If, however, the child is not nursed, but is given some artificial or indigestible food, or if the mother's milk is deficient in any of the constituents required by the infant, the structures give evidence of the malnutrition by certain definite changes.

The action of the saliva upon starch is not, in early infancy, so powerful as it is later, and it is found that immediately after birth the parotid secretion is the only one of the salivary fluids that contains ptyaline. It is also known that before the second month the pancreatic digestion of starch is *nil*. The peptic activity of the stomach is slight and the quantity of the gastric juice small. The lymphatic vessels, however, are large,

but with the growth of the digestive system they diminish in size and activity. The lymphatic vessels carry nutritive material to the tissues, and for this purpose it is necessary that they should receive a large supply of pabulum for nerves, muscles, and other growing structures.

Rachitis is a disease that a superficial observer, or one who sees children infrequently, is apt to regard as shown only by bone deformity. If this deformity is extreme, or there is delay in dentition, the signs are readily appreciated, but the early symptoms of the disordered assimilative power are not always noticed or are not ascribed to this disease.

The bone changes, though the most evident, have much less influence on the life of the child than the catarrhal complications, the muscular debility, and the neurosial liabilities.\*

In this paper, which is not intended to cover all the symptoms of rachitis, but to call to your attention some changes which are often overlooked, I cannot do better than to quote the remarks of Cheadle:†

“Rickets is not to be regarded as a mere affection of the bones. This is so obvious and striking a feature of the rachitic state that it has assumed undue importance, and rickets has been in danger of being looked upon as simply a defective and perverted development of the osseous structures. . . . But it is something far more than this; the disease affects not only bones, but muscles and ligaments, mucous membrane and skin, the blood, and the nervous system.”

Jenner‡ states that rickets is no more a disease of the bones than is typhoid fever a disease of the intestines.

An early and most important symptom is the derangement of the alimentary tract. This condition is a catarrhal one, and varies in intensity at the various stages of the disease and in different children, depending on the character of the food and the manner in which it is administered.

Constipation is first observed, but it is soon followed by an

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\*“Treatment of Disease in Children.” By Angel Money, Philadelphia, 1887, p. 86.

† *British Medical Journal*, November 24, 1888, p. 1145.

‡ *Medical Times and Gazette*, March, 1860, p. 260.



irregular or relaxed state of the bowels. Jacobi\* believes that the bowels are confined because of weakened muscular action. The catarrh of the intestines produces an irregularity in the movements. The bowels are constipated for two or three days, then relaxed for a short time, after which they are again confined. In infants who are fed on condensed milk the fæces are usually small in quantity and show by their light color a deficiency of the biliary secretion. From some slight, existing cause, such as exposure to thermic changes, or as an alternating condition with the constipation, the movements become very loose, of bad odor, and at times are intermixed with mucus. This looseness is aggravated by improper food, and by variations in the barometer and thermometer. If severe purging comes on, the child emaciates rapidly, and has the symptoms which are incorrectly described as *cholera infantum* in many cases seen during the summer months.

When a catarrh is once induced in children improperly fed, there is considerable trouble in the attempt to regulate the diet to meet the demands of the economy. If cow's milk be selected and given to the infant without any dilution or predigestion, the weakened state of the intestines is shown in a manner that is surprising, for the child who was plump and rounded, with bowels somewhat constipated, is seen to become thinner and to have daily two or three lumpy, pasty movements, streaked with bile, often with a great deal of mucus and of bad odor. This deranged state of the bowels is much more common than would be inferred from a cursory examination, for it is only after careful questioning of the mother that it is possible to get a description of the character of the movements from day to day.

In the Babies' Shelter, where the children are received when one year old, I have noted the changes in the passages, and have become certain of the great extent of the catarrh and of the weakened muscular power of the intestinal walls. Almost all the children admitted to this institution are rachitic, having been fed at the table or from the bottle. According to the usual story of the mothers they were always well until given the fresh milk at the Shelter. Children who have had con-

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\* "System of Practical Medicine," edited by Pepper, vol. ii. p. 153.

denser milk or some starchy food, will, after admission, be confined in the bowels for a day or two, when they will pass masses of casein covered with mucus and streaked with bile. The number of the stools varies, but there are usually two or three in twenty-four hours. This state will continue for three or four days, when there will be noticeable a more uniform color of the passages and less stringy mucus. At the expiration of a fortnight, when the children are released from quarantine, there is seldom any further trouble, and the bowels act regularly. In a few instances children have had to be put on beef and mutton broths, as the diluted cow's milk seemed to occasion so much indigestion. They almost always lose in weight, but the muscles gain in firmness and the abdominal distention is lessened.

The catarrh of the intestine is, I have no doubt, in many instances the cause of the non-digestion of the fat which these children require. I have observed in this institution that the so-called fat diarrhoea is more easily induced in the children just admitted who have their intestinal walls covered by mucus than in the children who have been long enough under proper dietetic and hygienic conditions to allow the cells of the intestinal villi free to act.

*Bronchitis and catarrh* of laryngeal nasal membrane are common with all the cases of rickets. It is not necessary for the thorax to be misshapen or especially weakened in the bronchitis of this disease. Beading of the ribs is frequently observed without other alterations in the chest. The bronchitis is found where there is very little thoracic deformity and early in life. "Even without any deformity the rachitical process is accompanied from an early time with bronchial and tracheal catarrh."\* Such children under one year are plump, and unless carefully examined do not show their illness. The skin is white, the superficial veins are large, and the head is moist; dentition is slow, and the cough is believed by mothers to be due to the tardy appearance of the teeth. The bowels are out of order and alternate in their irregularity with the bronchitis. The physical signs will not always be the same. The child will be

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\* Jacobi, op. cit.

all "stuffed up" or have a "wheezing on the chest," as the mothers say. The severe attacks of bronchitis in debilitated children, or those who have exanthematous diseases, lead to inflammatory pulmonary changes. Bronchitis, followed by broncho-pneumonia and atelectasis, will in young children produce deformity of the thorax, and the altered configuration of the chest may be great while there is little epiphyseal thickening. The spasmodic breathing in some of the attacks of bronchitis may recur at short intervals and lead to bronchial and peribronchial changes with asthmatic seizures.

Changes in temperature, deranged stomach and bowels, or extension of a laryngitis, will cause a return of the cough and the "rattling on the chest."

The relationship of hypertrophy of the tonsils to the pigeon-breast is, I think, an association of two symptoms of the same disease.

*The nervous phenomena* of rickets are sources of danger against which careful physicians must guard to insure a stability of brain power in adult life.

Preyer \* states that at birth no reflex is exhibited, but that the irritability of the motor nerves is not so great as it is later. With the growth of the child the reflex irritability is much increased, and until the will is developed may, from certain causes, lead to excessive action, because the controlling cells that Gowers † mentions are not powerful enough to exercise their function.

Money ‡ makes a strong statement when he writes that in rickets the child is doubly a child if we think of its nervous system and its liability to catarrh.

Convulsions in children are often seen at the onset of acute diseases and with deranged digestion, but the primary cause is the weakness of the ganglionic centres due to the imperfect nourishment resulting from rickets.

Gee § reported one hundred and two children who had convulsions, and of these, forty-six were rickety.

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\* "The Senses and the Will," p. 227.

† *London Lancet*, May 10, 1890, p. 1007.

‡ Op. cit., p. 86.

§ "St. Bartholomew's Hospital Reports," vol. iii., 1867, p. 109.



West\* believes most thoroughly in the influence of the rickety constitution as predisposing to convulsions.

Improper food produces an unhealthy state of the stomach and intestines, and in consequence there are cycles of constipation and diarrhœa, the one irritating the nervous system, and the other weakening it.

There is not an acute disease of childhood which has not been observed to begin with convulsions, and "teething spasms" are familiar to every old nurse. The temperament and inheritance of children vary, but the association of the rachitic malnutrition with the occurrence of convulsions in nervous children is frequently forgotten.

The period of dentition is, in the popular mind, fraught with many dangers, because physicians have failed to inform mothers of the cause of fits and other convulsive attacks, but have tacitly agreed with the parents in attributing it to teething.

Gee's† view is that the delayed dentition and the tendency to the convulsions are simultaneous concomitants of the rickety diathesis, and that in none of the cases was there any reason to believe that the teeth bore any part in the causation of the fits.

Forchheimer is free to confess that he has never seen a case of teething spasms, but that in every case of spasms it has been easy to detect a much more plausible cause.‡

In the Babies' Shelter, where there are always twenty-five children under five years of age, there have been visitations of acute and exanthematous diseases of all kinds. With the exception of one child, who had a convulsion soon after admission, there has not been a spasm to mark the onset of any illness nor the appearance of the teeth. These children are simply fed and have good hygienic surroundings.

The convulsive tendency in children who have slight evidence of rickets in the bones will be seen in the history of Emma S.,—Out-Patient Department, St. Mary's Free Hospital for Children,—aged one year and eight months; the

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\* "On some Disorders of the Nervous System in Childhood," p. 25.

† "St. Bartholomew's Hospital Reports," vol. iii., 1867, p. 110.

‡ ARCHIVES OF PEDIATRICS, May, 1890, p. 351.

sixth child. Others died from diphtheria, pertussis, bowel-trouble, and convulsions; was nursed fifteen months; dentition began at *fourteenth* month; walked when fifteen months old.

The day before she was brought to the hospital had a severe convulsion. Had been given a boiled egg, and bowels were constipated. Usually fed condensed milk, bread, and at the table. On examination, child was found to have a follicular amygdalitis. Anterior fontanelle almost closed. No special enlargement of epiphyses. Shape of chest good. Twelve teeth. Slight bronchial catarrh. Child very active.

Reported in two days, and did not show signs of throat-trouble except a little swelling. Bowels moving well.

*Laryngismus stridulus* is one of the evidences of rachitis best understood, but is frequently treated symptomatically and constitutional and hygienic methods of preventing a recurrence of the alarming croup are neglected. The dependence of laryngismus stridulus upon rickets is noted by all writers who have described the disease. J. Lewis Smith \* states that "internal convulsions, the so-called laryngismus stridulus, or spasm of the glottis, has been observed in so large a proportion of cases that its occurrence in rachitis must be considered something more than mere coincidence."

Gee † reported fifty cases of laryngismus, of which number forty-eight were rickety. As further evidence of his belief in this association, he states that laryngismus, when treated as if wholly dependent upon the rickets (even if it be not so in fact), ceases to be a serious disease.

Statistics show the frequency of spasm of the glottis during the period of the first dentition, the irritation of the teeth and the softened spots in the skull being believed sufficient to induce the spasm of the laryngeal muscles. The first year in rickety children may be productive of the convulsions of cranio-tabes, but it cannot be overlooked that spasmodic laryngitis is seen later in life, and that a heightened reflex, ‡ or aug-

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\* "Treatise on the Diseases of Infancy and Childhood," 3d Edition, p. 95.

† "St. Bartholomew's Hospital Reports," vol. iii., 1867, p. 101.

‡ "Transaction of the Association of American Physicians," vol. i., 1886; "Spasm of the Glottis in Rickets," by Jas. T. Whittaker, p. 69.

mented excitability, is an essential factor in the development of spasm of the glottis. There is enough evidence of the effect of the malnutrition of rickets on the nerve-structures to show that the changes induced cause conditions of instability which weaken the mental and intellectual powers. In childhood, the reflex control being somewhat undeveloped, the laryngismus may be one of the symptoms of irritability.

Barlow and Bury\* give their opinion that laryngismus stridulus is more common after nine months than before, while cranio-tabes is pre-eminently an early manifestation. Whitaker† states that it is frequently absent in the most pronounced cases of rickets, and present in the lighter forms of the disease.

A case in point is that of a child seen at the Out-Door Department of Bellevue Hospital early in April. Henry B., aged three and a half years; seventh child. Nursed until two years old. Dentition began at twelve months. Then cut seven teeth in one month. Talked at the time of dentition. Head used to be hot at night and wet with perspiration. Never wanted anything over him. When two years old had a severe convulsion, which lasted, so the mother said, for seven hours. That was at the time of the appearance of the double teeth. Since then has had convulsions about once a month, usually when stomach was out of order. If he vomits, or bowels move, is always better. Two or three times has had "croup attacks."

*April 14.*—Last night he awoke suddenly with a loud crowing. Face was blue, eyes were fixed, and there were contractions of fingers and toes. Under counter-irritation, etc., the attack passed off, but the boy was weak. On examination, I found that excitement would cause stridulus inspiration. The throat was somewhat congested and the right tonsil a little enlarged. The boy shows rachitic changes in the chest, long bones, and along the sutures, but not severe. Mentally the child is active but irritable. Under treatment with bromide and chloral his symptoms have been relieved,

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\* "Cyclopædia of the Diseases of Children," vol. ii. p. 224.

† Loc. cit.



and with cod-liver oil and phosphorus he has gained in strength.

The history shows that mild rachitic symptoms, without extreme bone change, may be overlooked, and the convulsions be treated as if due to the deranged stomach and bowels.

*Muscular weakness* varies in severity from inability to support the head and trunk, seen early in rickets and usually in infants with bone changes, to the transient loss of power in the second year and after. In the early and severe form of weakness the infant is unable to keep up its head and the spine is badly curved. When the baby is placed in the recumbent position the cyphosis disappears. There may be some lateral curvature if the child is held on one side most of the time. The muscles are soft and flabby.

With the later development of rachitis, or with a loss of muscular power without any exhausting or wasting disease, the origin is apt to be overlooked. I have seen a number of cases where the diagnosis of poliomyelitis anterior acuta had been made after a superficial examination. The electrical reaction and progressive character of the infantile paralysis should be sufficient to prevent this error, even if the history of the case is uncertain.

Gee \* believes that a child, who cannot walk at eighteen months, unless weakened by an acute disease, is either rickety or paralyzed. Simon † calls attention to the muscular weakness in children past the age of twelve or fifteen months, and states that it is an important evidence of the existence of rickets. Brief histories of two cases which present the characteristics of the muscular inability show that this may be the most prominent symptom of the rickets.

Joseph R., aged nine months, seen at Out-Door Department, Bellevue Hospital, May 14, 1890. Child is well nourished, with skin firm and red. Muscles are flabby. He is unable to sit upright, but can partly support himself when dressed with a firm binder. Head falls forward and spine is curved in lower dorsal region; this can be relieved by supporting the

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\* "St. Bartholomew's Hospital Reports," vol. iv. p. 72.

† *Revue Générale de Clinique et de Thérapeutique*, June 14, 1888.

baby under the arms. There is a slight lateral curvature to the left as the child usually rests on the right side. Head perspires a great deal; hair is light and thin; anterior fontanelle not open very wide; two soft spots in the occipital bone. Epiphyses are not much enlarged, and there is little change in the thorax. There are no teeth. There is some bronchitis. Bowels are somewhat confined and do not move more than once a day. The baby is given the breast five or six times a day and at night. He has also condensed milk, baked potatoes, etc. The mother looks well, but says that she vomited all through her pregnancy.

The general condition of the child is remarkably good, but the muscular weakness is extreme, and a physician, who was consulted by the mother, advised the application of a plaster-jacket.

The second case is that of Agnes L., aged two years and three months, seen at the Out-Patient Department, St. Mary's Free Hospital for Children, April 17, 1890. Patient does not walk, as the legs have to be spread to keep her balanced; ligaments of knees and ankles are weak; muscles are flabby; fontanelles closed; bony condition good; epiphyses not enlarged; slight chest changes; right upper lateral incisor has not appeared. Child does not talk much; says "papa and mamma."

Mother says that the child was nursed until sixteen months old, but since then has been fed everything. Dentition began at eight months. Never had much perspiration of the head but was always restless at night. Never walked, and had difficulty in standing unless supported.

The girl's diet was regulated; friction over the joints and muscles was ordered twice a day, and she was given cod-liver oil with the compound syrup of the hypophosphites. April 29, it is noted that she is stronger, and on May 15, "much improved; walks without aid."

*Dentition* is a physiological process that should progress without the alarming symptoms ascribed to the period of teething. In children whose first teeth do not appear until the end of a year the delayed dentition is frequently found to result from rickets. With irregular and crossed teething the influence of this disease is seldom regarded. "Irregular teething is a con-

stant companion of maxillary rachitis, but it is also present where the latter is not well, or not at all, marked." \*

The boy H. W., whose history will be narrated farther on, furnishes a good illustration of the delayed dentition of rickets. His first tooth appeared at the age of sixteen months, and at twenty-three months he had but four incisors. The two upper incisors showed before the lower. Engelsen, † in his studies on the causes of the irregular positions of the teeth, found that one-half of the irregularities in the disposition of the teeth are due to the rachitic change. The girl, Agnes L., shows one of the peculiar phases of the delayed dentition. She has no right lateral incisor in the upper jaw, although the other teeth came with fair regularity.

The teeth of rachitic children soon decay. The central incisors are often found without any enamel and are black and broken. Sometimes the molars are mere shells. This is a disfigurement that is seen every day. With the susceptible nerves of these rachitic children it is easy for them to have neuralgias and disturbances of remote organs. The interference with mastication will continue the catarrh of the stomach, and the child will be still further weakened.

Here, then, is one of neglected symptoms of rickets entailing suffering for a lifetime and inducing derangements that may become permanent.

*Excessive perspiration* of the head and upper part of the chest is a symptom of rachitis that is frequently ascribed to weakness. This association is not disadvantageous in treatment, for it leads to the giving of proper attention to dietetic and tonic management.

The perspiration is most severe when the infant is asleep. The occiput, neck, and forehead are constantly moist with the transuded fluid. Sometimes there is so much perspiration that great drops stand on the forehead and run over the face and neck. Sudamina and miliaria are produced by the moisture. The hair is soft and fine, except over the occiput where the surface is denuded, or there is only a downy growth.

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\* Jacobi, op. cit., p. 151.

† ARCHIVES OF PEDIATRICS, December, 1888, p. 758, from *Jahrbuch f. Kinderh.*, xxviii. 2.



Nellie L., aged thirteen months, was admitted to the Babies' Shelter. She could not stand; had a chalky complexion and soft muscles. Bones not much enlarged at epiphyses. No cranio-tabes; anterior fontanelle wide open; head denuded of hair over the occiput so that it looked as if it had been shaved. Great perspiration when asleep. Learned from the mother that the child had been fed on condensed milk ever since the first month. Always restless at night and never liked clothing over her. Dentition began at nine months; never sat up; was always a "wise child." This girl gave a great deal of trouble because of catarrh of the intestines, but under proper treatment she gained in strength so that she slept well, the perspiration ceased, and the hair grew thick. Muscular strength increased rapidly.

*Facial eczema* is a lesion of the skin which, if not always the result of the deranged nutrition of rachitis, is so frequently associated with it that its presence should lead the physician to make a careful examination of the bony structures to determine the existence of changes in the epiphyses. The eczema is most often seen on fat, lymphatic children, and in my experience is usually observed in those who are given condensed milk, artificial food, or who are fed indiscriminately at the table. Its appearance at the period of dentition has led physicians to regard the teeth as the cause of the irritation of the cutaneous surface.

"It is altogether too much the custom to refer skin-diseases, as well as other affections in teething children, to the irritation of dentition alone." \*

Niemeyer† believes eczema to be the analogue of catarrh. In the rachitic state there is an obstructed venous circulation due to the changes in the mucous surface of the respiratory passages, to the imperfect oxidation of the improper food material, and to the hydræmia. The lymphatic circulation is deranged, and the skin of the face and head is easily irritated. The bowels of the children who have eczema are constipated or irregular in action, and this is another source of disturbance.

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\* "Diseases of Children," Meigs and Pepper, 7th Edition, p. 984.

† "Practical Medicine," vol. ii. p. 467.

This eczema is commonly observed over the malar prominences and the cheeks. Generally it is of the moist variety, but it may be dry and scaly. Another situation for it is back of the ears, where it is almost always moist. In children whose constitutional condition is much weakened from poor hygiene and diet, slight irritation of any kind will cause the eczema to spread. Enlarged glands are observed in debilitated children. These increase rapidly in size and with suppurative cutaneous lesions often break down.

The destructive tendency of this severe eczema will be readily appreciated in the brief history of a case which came under my care a few months ago at the Out-Patient Department, St. Mary's Free Hospital for Children.

Harry W., aged twenty months. Never nursed, but fed on condensed milk until seven months old. Dentition began at *eighteen* months, and now has four incisor teeth. Walked when sixteen months of age. Anterior fontanelle open. Eczema of the face, especially on the right side. Large lymphatic glands over parotid region. The gland suppurated, and the abscess had to be opened. Eczema disappeared.

Two months after this I noted that the anterior fontanelle had closed, but that the child had no more teeth. Slight laryngeal and bronchial catarrh. Bowels somewhat irregular. The treatment was hygienic and cod-liver oil.

The photograph of an Italian child, Designi, aged nine months, who came to the Out-Door Department of Bellevue Hospital a few weeks ago, shows plainly how extensive eczema may be in a child who is nursed but who gives all the signs of rickets.

The few histories presented show that there are weaknesses of brain-structure and tissue-changes of various kinds that are undoubtedly due to the non-recognition of the fact that rickets is something more than a disease of the bones. From these histories are drawn the following conclusions:

Rachitis is a disease of nutrition.

It is manifested in early life because that is the period of physiological growth, and anything that prevents or retards food-assimilation may cause the disease.

The chemical changes produced by the malnutrition are not

fully understood, but it is well known that the deprivation of fats and albuminoids has a great deal to do with the development of rickets.

The symptoms of rachitis are often nothing more than the catarrhs of the alimentary and respiratory tracts, delayed dentition, muscular weakness, and nervous irritability.

Under proper hygienic and dietetic conditions these symptoms of incipient rachitis disappear, because with an increased glandular, secretory activity the function of the lymphatic system is *pari passu* diminished.

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## A CASE OF TRANSPOSITION OF THE AORTA AND PULMONARY ARTERY, WITH PATENT FORAMEN OVALE: DEATH AT TEN YEARS OF AGE.

BY JOHN DORNING, M.D.,

New York City.

T. H. first came under observation May 14, 1883. He was then twenty-three months old. Both parents healthy; never had rheumatism. Maternal ancestors suffered from rheumatism. One other child, three years old, healthy (mother has had three children since, all healthy). The patient when born was blue, but breathed all right; was nursed until fourteen months old. Suffered with constipation while nursing, but bowels became regular after weaning. Had malarial fever when twenty months old. (Lived in New Jersey.) Urine has been of a dark color and strong odor. Mother thinks child is no more blue now than when born. When he is cold or has a chill, blueness is more marked. Eats and sleeps well.

Examination by Dr. Ripley and myself showed marked general cyanosis, lividity of lips and tongue, dilatation of superficial veins, clubbing of fingers and toes, non-closure of anterior fontanelle, rachitic conformation of chest, and slight œdema over tibiæ. There is some bulging of præcordial region; increased area of cardiac impulse; heart's beat forcible but regular; apex beat beneath left nipple in sixth interspace; loud systolic bruit heard towards the base of the heart, with maxi-



mum intensity in third interspace a little to left of sternum. It is heard behind, at lower angle of scapula, but is not transmitted around the side of the chest, nor is it audible in the vessels of the neck. Numerous dry and moist râles in chest; respirations, 40. Prescribed digitalis, cod-liver oil, and quinine.

*May 22, 1883.*—Has severe attack of follicular tonsillitis.

*June 5, 1883.*—There seems to be some general improvement; cyanosis about the same; râles have disappeared, otherwise no change in physical signs; respirations, 40.

*June 27, 1883.*—Has had an attack of measles since last seen; murmur not so loud.

*July 10, 1883.*—Has had diarrhoea for a few days which has prostrated him very much.

*December 11, 1883.*—Cardiac murmur quite loud; no change in physical signs; general improvement; cyanosis not so intense as when first seen.

*October 4, 1884.*—During past summer had catarrh of middle ear; continues to improve; can walk some with the aid of braces on legs; suffers from occasional attacks of indigestion; dyspnoea and increase of cyanosis on even moderate exertion.

*December 13, 1884.*—Had two attacks of syncope yesterday without any apparent cause. To-day, pulse, 120, regular; respirations 30.

*February 19, 1885.*—Mother reports that patient has been in "splendid condition" since last visit; no attacks of syncope; physical signs the same; respirations, 30; pulse, 120.

*September 8, 1885.*—Has felt very well all spring and summer; brought to-day ailing with an attack of bronchitis; coughing causes increase in cyanosis and much prostration.

*September 22, 1885.*—Bronchitis well; cyanosis less marked; anterior fontanelle closed.

During July and August suffered with a moderately severe attack of pertussis without any complications.

*December 7, 1887.*—Compared with a few years ago there is a decided decrease in the cyanosis. The clubbing of fingers and toes not so prominent; cardiac murmur diminished in intensity and hardly perceptible behind. Tries to join other children in play, but soon tires and finds breathing difficult.

*December 5, 1888.*—"Has been in excellent health until last

week ;" has had two attacks of bronchitis, for which his mother had his former prescription renewed. For the past week has complained of shoes being too tight ; two days ago face became quite puffed ; to-day he is more pale and cyanotic than usual ; face is not swollen, but there is some œdema below knees ; coughs quite a little ; great dyspnœa on slight exertion. There are sonorous, sibilant, and mucous râles all over chest ; rude respiration on right side behind ; temperature normal ; heart acting tumultuously but regular in rhythm ; murmur more perceptible over body of heart than at the base ; is not passing a great deal of urine ; a specimen examined showed a specific gravity 1012 and a good trace of albumen. Prescribed digitalis, strophanthus, and citrate of potassa.

*December 12, 1888.*—Much improved ; cough almost gone.

*December 30, 1888.*—No cough ; no œdema.

*October 15, 1889.*—Has been doing well all along, with exception of occasional attacks of bronchitis, for which his old prescription (Mist. Glycyrrhiz. Co. and digitalis) was used.

*December 2, 1889.*—This morning was seized with a severe pain in region of the heart ; felt that he was dying ; bid parents and brothers and sisters good-by ; his mother said he turned perfectly white when the attack came on ; his lips became blanched, eyes rolled up, and his face assumed an anxious look. The father, who is an intelligent man, tried to feel his pulse ; he said it failed to beat for some seconds, then began to beat slowly and intermittently. When I saw him, three hours later, he was very pale, quite cyanotic, and somewhat agitated. Pulse, 58, irregular and intermittent ; respirations, 30. There is a humming sound accentuated with the systole diffused all over the chest, but most intense over body of heart near the base. No blowing murmur could be detected ; gave small dose of morphine to allay agitation, and also for its action on the heart ; ordered repeated doses of digitalis and strophanthus ; examination of urine showed eight per cent. albumen ; no casts.

*December 4, 1889.*—Father reports that child is quite well again ; urine contains trace of albumen.

*December 9, 1889.*—Well and playful all day ; was out in his wagon in afternoon. At 6 P.M. had just finished his supper of bread and milk, when he complained of feeling sick and called

for a glass of water. As the glass was handed to him "his eyes rolled up, his jaw stiffened, and he fell back dead."

On post-mortem examination of the heart the organ was found to be larger than the adult heart.

Right ventricle very much hypertrophied.

Right auricle greatly dilated.

Left side of heart does not show much hypertrophic change.

Valves exhibit nothing abnormal.

Coronary arteries large and patulous.

Foramen ovale patent.

No interventricular communication.

Aorta arises from right ventricle.

Pulmonary artery originates from left ventricle.

The absence of a carefully performed autopsy, which the circumstances of the case did not permit, prevents us from drawing the valuable deductions which must undoubtedly be associated with such a case. There are, however, two interesting points which may be mentioned: First, the long duration of life. Most of these cases are said to die within a few weeks after birth. Where there is also an interventricular communication the chances for a longer period of existence are better.

In this case the patent foramen ovale, which was a secondary complication, acted unquestionably as a safety-valve, allowing a commingling of the two blood-currents.

Second, the fact that the patient did not succumb to the attack of pertussis, which even in a healthy child would have involved some temporary disturbance of the circulation.

The treatment consisted of the administration of cod-liver oil, alone or combined with the hypophosphites and iron almost continuously for the first few years. After that they were given for a few months in each year. Digitalis was prescribed according to indications.

In regard to the cause of this anomaly, I think Rokitansky gives the most satisfactory explanation. He attributes it to a premature cessation of the rotation of the truncus arteriosus communis, probably due to its fixations by a pericardial inflammatory adhesion.

(To be continued.)



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THE SIGNIFICANCE OF HIGH TEMPERATURE  
IN CHILDREN.\*

BY WILLIAM L. STOWELL, M.D.,

Instructor in Diseases of Children in University Medical College of New York;  
Visiting Physician to Demilt Dispensary.

It is not the purpose of so brief a paper as this to enter into details regarding the theories of heat-production and all the physiological intricacies of animal heat and tissue metabolism.

We know that the temperature of the body is maintained at a certain standard; that heat is developed by muscular action, oxidation of tissue, and by glandular activity; for example, the blood in the veins coming from the kidney or liver is warmer than when it enters the organ.

The body is kept from becoming too hot by evaporation from the skin, and by the watery vapor and carbon dioxide given off as the blood circulates through the lungs. The abstraction of urine from the body lessens temperature a little.

We know that there is a marked sympathy between the skin and kidneys, so that when one fails to act the other is called upon for more work, and *vice versa*. It is from this

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\* Read to the Section on Diseases of Children, Nashville, May, 1890.

ready sympathy that sudden chilling of the surface produces congestion of the kidneys, which we so often have in patients convalescing from scarlatina. The normal heat of the body is subject to diurnal variations, and differs in various ages. While the mean temperature of a healthy adult is  $98.6^{\circ}$  F., or  $37^{\circ}$  C., that of the infant and child is a degree or two higher. In thirty-three cases at birth, reported by Roger, the temperature was  $98.6^{\circ}$ , the same as that of the mother. In an hour it fell below this point, but soon rose to  $99^{\circ}$  or more, which point was maintained throughout infancy.

The minimum temperature for the twenty-four hours is between 12 and 2 A.M. About 3 P.M. the temperature begins to rise for the diurnal acme, but drops back a degree or more between seven and nine o'clock. These variations occur both in health and disease, and are influenced by exercise, rest, abstinence of feeding, etc.

We now come to the pathological considerations. The older physicians recognized fever by the frequency of the pulse and by heat or dryness of the surface of the body. These methods are by no means to be set aside, though not so accurate an indication of the heat of the body as the clinical thermometer now so generally used.

Self-registering instruments only should be employed, and they should be placed in the axilla or rectum of the child. Adults can hold the instrument under the tongue; not so the infant. From considerations of cleanliness, or perhaps modesty, the bowel is objectionable, but the heat here is less subject to variations than elsewhere, and then, too, if desired, the thermometer may remain in place while the child is in a bath.

It should be remembered that the rectal and vaginal temperatures are one degree higher than in the axilla or under the tongue. If the instrument be placed under the arm, the axilla must first be wiped dry from perspiration, and caution used to be sure that the arm is pressed against the chest to exclude air and warm the bulb rapidly. The reading of the index will be sufficiently accurate if the thermometer be left in place two minutes after the mercury has ceased to rise.

Surface temperatures are very uncertain, and need not occupy our attention now. Boerhaave used the thermometer a hundred years ago, but it was not perfected as a clinical instrument and brought into every-day use until 1850-51, when Traube and Bärrensprung studied and wrote on the subject of fevers and abnormal temperature.

Children, we know, have very susceptible nervous systems, and may be in a high fever from very little apparent morphological cause. A mild attack of indigestion, for example, may give a child a temperature of  $104^{\circ}$  or  $105^{\circ}$ , which will be relieved entirely by a dose of calomel or castor oil. The fever here seems due to reflex interference with the heat-governing centres. The exact locality of these centres is not fixed, though there seem to be two situated in the upper portion of the spinal cord,—one, the upper, to increase heat-production, the other, and lower centre, to lessen heat.

During the fever we find marked increase in the quantity of urea in the urine and an excess of potash salts to the extent of seven times their usual quantity. These conditions show that there has been great waste in the albumen of the body, first in the food taken, and then drawing upon the muscles and formed tissues. The increase of anæmia and weakness are accordingly in direct proportion to the severity and continuance of the pyrexia. It is possible that the albumen of the blood is decomposed without first becoming part of the tissue, this change being wrought by the zymotic ferment of certain fevers.

Senator sums up this subject in "Ziemssen's Cyclopædia" (vol. xvi. p. 341) as follows:

"It is probable, on theoretical grounds, that the decomposition of albumen takes place—at any rate in the infectious fevers—in the blood itself, the latter forfeiting a part of its own albuminates; further, that the organ albumen of tissues is likewise decomposed *in situ*, the residual products of decomposition, the non-azotized compounds, often remaining unoxidized in the tissues as fatty matter."

Have we not here an explanation of the fatty degeneration which is so marked in fatal cases of diphtheria, scarlatina, typhoid fever, and the like. Still, we must remember that the



extent of degeneration does not always seem proportionate to the pyrexia.

The point to which the mercury will rise, varies much, as in Finlayson's case of puerperal fever, which had a temperature of  $114^{\circ}$  just before death, and a case of pernicious anæmia, in which the rectal temperature was but  $92^{\circ}$  shortly before death. In infantile paralysis the temperature, according to Hammond, is  $5^{\circ}$  or  $8^{\circ}$  below normal, and in sclerema it is remarkably low.

Dr. Teale had a patient, a young woman, who sustained injuries to the dorsal region of the spine, who had for weeks a temperature ranging from  $110^{\circ}$  to  $120^{\circ}$ . She finally recovered (*Clinical Transactions*, 1875).

Few other authentic cases are recorded with anything like these wide variations. As all know, the usual temperature of the exanthemata is above normal and subject to variation. For instance, a temperature of  $101.5^{\circ}$  or  $102.5^{\circ}$  is common in measles, and often does not rise higher in marked cases. Should the temperature be  $104^{\circ}$  after the eruption comes out, we look for inflammation, usually of the lung, a bronchopneumonia.

If the case has a very slow convalescence, and the temperature remains  $1^{\circ}$  or  $2^{\circ}$  above normal instead of falling as the rash goes away, we are suspicious of beginning tuberculosis. The measles patient, if of phthisical parentage, is an especially good subject for this disease.

- In scarlatina, on the other hand, we are not alarmed by a temperature of  $104^{\circ}$  or more in the commencement, but are only worried if it fails to decline as the eruption disappears. Should the fever increase while the rash is decreasing, it is a signal to examine the urine for nephritis and lungs for croupous pneumonia. Again, the constant high fever with a rapid pulse may indicate diphtheria as a complication. As a rule, the pulse is rapid and full in scarlatina, 130 to 140, but feebleness or irregularity is very characteristic of diphtheria. In diphtheria the temperature is highest at the beginning of the attack, and usually not more than  $102.5^{\circ}$ . The cases with temperature  $105^{\circ}$  and above, that occur suddenly, are to be regarded as grave. Fatty degeneration and prostration come on

early in such. Those cases having membrane in nose or larynx and pharynx are most likely to have high fever. On the other hand, a very low temperature may exist throughout a most malignant case. In fact, diphtheria may be stated to have the most irregular symptoms and history of any disease of childhood.

Pneumonia usually begins suddenly with high fever and pulse to correspond. The highest point in the fever being when the lung is completely solidified. This may occur in twenty-four or thirty-six hours, or not until the fourth day or later. The decline is then gradual until the normal point is reached. In children we cannot predict a crisis on the seventh or ninth day. There is no certainty about it. When the temperature fails to fall after three or four days, we have probably an extension of inflammation to the other lung, or the kidneys are not doing their whole duty. Pericarditis or endocarditis may exist. In catarrhal or broncho-pneumonia the temperature is seldom above  $102.5^{\circ}$  or  $103^{\circ}$ , but it keeps up. The pulse, too, is weak and rapid, as the chest is more or less filled with the products of inflammation. Here, obviously, the general weakness rather than pyrexia call for treatment. Pleurisy, though not a disease ordinarily of high fever, sometimes begins abruptly with an elevation of  $103^{\circ}$  or  $104^{\circ}$ , or, as in one of my cases, over  $105^{\circ}$ . In empyema the temperature remains high, and occasionally becomes remittent in character. Dr. A. L. Loomis believes that in all cases where the temperature is high the exudate is pus rather than serum or fibrin.

In enteric or typhoid fever of childhood we again meet with a departure from the typical temperature-range of adult cases. It is characterized by a more uniform range, some cases being persistently high, while others remain for weeks at  $101^{\circ}$  to  $102^{\circ}$  without "step-ladder" rise. If diarrhoea or epistaxis occurs, the temperature is likely to fall for a short time. Bloody stools and collapse are rarely seen in children. I have seen the temperature remain in the neighborhood of  $104^{\circ}$  for three weeks together in enteric fever, varying only a degree up or down when large doses of antipyretics were given. As in such cases the fashion of the disease is to keep up a fever, will

we not give the patient a better chance of recovery by keeping up the nourishment rather than by constantly fighting the fever with antipyretics, which are all more or less cardiac depressants?

In phthisis the fever is constant, and subject to the diurnal variations giving rise to "hectic" in the afternoon. The temperature is rarely high enough to call for special treatment.

Tubercular meningitis is a disease in which the temperature varies with the course and progress of the disease. The head is nearly always hotter than the body. In fact, the surface or axillary temperature may be subnormal, according to the thermometer. Even the rectal temperature may be only  $97^{\circ}$  or  $98^{\circ}$  for some days, and then rise to  $102^{\circ}$  or above. A slow intermitting or irregular pulse is not uncommon in meningitis even while high temperature exists. A continuous high fever or sudden jump of temperature would be suggestive of pneumonia or capillary bronchitis as a complication.

In capillary bronchitis we have a very fatal disease of childhood, which is accompanied by a temperature of  $104^{\circ}$  to  $105^{\circ}$  and unusual rapidity of pulse and respiration. The ratio of the three symptoms is more perfectly maintained in this than almost any other ailment; a temperature of  $105^{\circ}$ , respiration 80, and pulse 180 or 200 not being uncommon.

The malarial fevers run a more irregular course in childhood than in adult life, and, as a rule, do not have as high a fever nor as marked remissions.

In chorea major the temperature may be increased  $1^{\circ}$  or  $2^{\circ}$ ; in part due to muscular activity, in part to interference with the heat-governing centres.

*Therapeutics of hyperpyrexia.*—Will antipyretics abort or shorten the course of any specific fever? No. Does their use ameliorate the symptoms and render the prognosis more favorable? That depends upon how they are used and upon the choice of cases.

One or two fair doses of acetanilide, antipyrin, or phenacetin will lessen the initial fever and accompanying headache of pneumonia or scarlatina, and make the patient more com-



fortable. The disease is not aborted, but only a symptom or two relieved. Persistence in the use of these drugs will be detrimental to recovery, because they weaken the heart. In my hands they are little superior to the old treatment of aconite or veratrum viride. With the latter the temperature and pulse may be kept down to almost any desired point and the activity of the skin and kidneys promoted. These drugs increase capillary circulation and favor evaporation from the surface. Cold sponging or bathing chemically abstracts the heat. Alcohol acts in two ways,—by lessening tissue metabolism, diminishing heat-production, and by favoring peripheral circulation, aiding evaporation.

Cold sponging in mild cases is agreeable and beneficial, and severe cases of pneumonia and typhoid have been treated by cold baths; yet the danger of collapse from so heroic treatment must be borne in mind. Occasionally the cold pack seems to be the proper and only means to use.

I have discarded quinine wholly as an antipyretic for children, except in very marked cases of undoubted ague. For its tonic effect we may give it in small doses—half a grain—in broncho-pneumonia, typhoid fever, diphtheria, etc.

A high temperature in capillary bronchitis or catarrhal pneumonia following measles may be as much due to weakness as to inflammation. Quinine with digitalis will in a few hours do more for such cases than any new antipyretics as such. The diphtheria patient with high temperature is benefited by iron and potash when large doses of quinine or depressants would be ruinous. In all febrile states the gastric juice and pancreatic juice are diminished in amount, so that care has to be used in nourishing the patient. The carbohydrates are best digested and milk forms the staple diet. When the digestive powers are very feeble the milk should be peptonized or given as koumiss.

Let me summarize this article in the following statements:

The child's temperature is normally higher than that of the adult.

The temperature may be very high from apparently inadequate causes; usually nervous impressions or reflex disturbance.

The febrile diseases all have what may be called their normal range of temperature, which does not indicate treatment unless excessive, or out of its normal course.

Antipyretics are to be used with caution lest while they lessen fever they weaken the heart, and so lessen the chances of favorable termination of the disease.

The fever may often be lessened indirectly by heart-tonics, general tonics, and food.

The tendency of nutrition in childhood is towards growth and repair, not degeneration; hence careful nursing and feeding will do more towards a favorable result than converting the child into a drug analyzer.

## Clinical Lectures.

### INFANT-FEEDING.

BY OLIVER P. REX, M.D.,

Lecturer on Pediatrics in the Jefferson Medical College, Philadelphia, Pa.

GENTLEMEN:—The first case I present to you to-day is a child two months old.

CASE I.—This child has been delicate from birth. It was then its flesh hung loosely from its limbs and its growth had stopped. For some reason which seems difficult to understand, the physician had told the mother not to feed it on her breast. She had enough milk to nourish it in part, and had nursed all of her three other children. As a consequence, she is now feeding this poor little baby on cow's milk and water in equal parts. It vomits often, its bowels are costive, stools green, and there are evidences of pain at defecation. Separating the nates, you can see a protrusion of the rectal mucous membrane, which looks like a hemorrhoid, or even, on closer examination, like a polyp. This local condition bears something of a causal relation to the child's constipation. It is said that a not uncommon cause of constipation is an unrecognized rectal fissure, which, by the pain it causes, induces what at first is in reality a disinclination to voluntary evacuation of the bowels.

Crying is the infant's only means of communicating its wants. Not long ago I was called to see a child because it was constantly crying. After very careful examination of the whole body, I could find nothing to account for the crying. Finally, as a last resort, I asked whether the child was ever given water to drink, and the mother said no. A cup of water was offered it, and the thirsty little one drank greedily, stopped crying, and went peacefully to sleep. Coldness of the feet often causes a child to cry, and the fact of lying too long on one side may be responsible for an otherwise inexplicable crying spell.

This child is fretful and cries frequently because it has pain, and, as we might suppose, the mother feeds it whenever it cries. The more indigestible food it gets the more it cries, and the more additional food it is burdened with,—a vicious circle of practical dietetics. To go back to the beginning, this child is improperly fed. The diluted cow's milk has given it dyspepsia, which by extension into the bowels has set up a well-developed enteritis.

If you will look at this nursing-bottle—an abomination with a long rubber tube from the bottle to the nipple—you need not wonder at this result. You might as well feed the child on contaminated milk at once, for after the first nursing from such a bottle the inner surface of the rubber tube is lined with a stratum of putrescent milk curd, over which thereafter flows the daily supply of food into the child's stomach. It is impossible to keep such a tube perfectly clean, and this form of nursing-bottle is a constant menace and danger. The nursing-bottle should be as simple as possible in construction,



with a black rubber nipple. After every nursing the bottle should be scalded out with a solution of bicarbonate of soda or sal soda, and the nipple should be everted over the thumb and scrubbed with a brush wet with the same solution. In the intervals between nursing the nipple should be kept in a solution of bicarbonate of soda or salicylate of soda.

Speaking broadly, the whole medical treatment of the first year of infancy comes down to a question of proper feeding. How few diseases come naturally to the infant in its first year! It leads almost a charmed life, provided its feeding be properly carried out.

This child is also overfed. Whenever it cries the mother stifles this significant signal-note for a time with a draught of warm fluid.

The constant presence of food in the stomach causes a constant activity of its glandular structure. Increased vascularity means increased secretion, and thus is produced a catarrhal condition. Rational treatment must commence at the starting-point of the disease. Let us begin with the blandest and most acceptable food to the stomach,—albumen water. Take one pint of boiling water and cool it until tepid. Into this stir by degrees the white of one egg. Be careful to add a very little white at a time, stirring constantly until the whole has been dissolved in the water. This makes a mucilaginous mixture, which may be flavored with a pinch of salt, or sugar, or, as is preferred in the Paris hospitals, with orange-flower water. A teaspoonful to a tablespoonful of this drink given every five, ten, or fifteen minutes will quickly stop vomiting, and now the diet can be supplemented by the addition of barley-water. Take one to two tablespoonfuls of thoroughly-washed pearled barley, put in a pint of water, and keep at boiling-point for an hour. This gives a gelatinous liquid, to which the white of an egg may be added as before, with a teaspoonful of brandy, a pinch of salt, and a little sugar. At this stage the diet may be varied by using rice-water or equal parts of barley-water and lamb broth. From this rather restricted diet we can soon proceed to the use of sterilized milk. If the child is constipated, Mellin's food may be employed with advantage, while a tendency to looseness can be best controlled by the peptogenic milk powder. Thus, step by step, without the use of any medicine at all, this child's digestion can be brought back to a natural condition.

#### SPASMUS NUTANS OR NICTITATIO SPASTICA.

CASE II.—This is a child which has been under treatment at our dispensary for the past seven weeks for choreic movements of the head, with horizontal nystagmus. Careful examination revealed no organic disease of the eye, and it was found that a bright object held slightly above the child's head, to attract its attention, caused the nodding of the head and the oscillation of the eyeballs to be temporarily quieted. The nodding movements seemed to be due to an effort to fix the visual axes, which were being constantly changed by the oscillating movements of the eyes. The application of a compress and bandage to the eyes, so as to exclude every ray of light, at once stopped the nodding movements, and the mother was directed to keep the bandage constantly in place for a week. After this the use of the bandage was suspended for a short time at daily intervals. Ten drops of the compound syrup of the hypophosphites was ordered to be given three times a day, as the child showed a scrofulous taint. To-day the child is presented to you completely cured.

This affection has been confounded with that form of epilepsy known as the "salaam convulsions," in which the paroxysm consists

of a slow movement of flexion of the upper part of the body, very closely resembling the solemn salute practised in Eastern countries. This form of epilepsy is not uncommon in children, and has often been mistaken by parents for a precocious manifestation of politeness. The etiology of the present disease is unknown.

#### CHOREA.

CASE III.—This little girl, six years old, is shown to you especially on account of a peculiar complication that has been manifested during her treatment for an ordinary case of chorea. Fowler's solution was prescribed in the usual way, and when a dose of six drops (three times daily) was reached she developed well-marked torticollis. This is her second attack of chorea, and I am told that, when before under treatment, as soon as the constitutional effect of the arsenic was manifested the chorea got better, but that a rheumatic condition developed, and with this wry neck. The cause of wry neck during her present course of treatment is rather puzzling, and she is shown to you simply as an interesting case.

#### VULVITIS IN A CHILD.

CASE IV.—This little colored girl, nine years old, has been complaining for the past five or six months of headache and irritability of the stomach. We are told that she is annoyed with seat-worms, and has a whitish discharge from the vulva, which, no doubt, is due to vulvitis.

Catarrhal inflammation of the vulva is found, as a rule, not before the age of five years. It may be due to the irritation caused by the presence of the oxyuris vermicularis, which is, indeed, present in this case. More frequently it is simply an expression of the strumous diathesis, which, you know, is very common in the mulatto. Again, we may have a vulvitis of specific origin. I have known gonorrhœa to be contracted by a little girl simply from sitting in the lap of a young man who was affected with the disease, some particle of the discharge having been conveyed by direct contact with his clothing. In certain parts of England it was for a long time, and still is to some extent, a popular belief that the best cure for gonorrhœa is to bring the affected organ in contact with the genitals of a virgin child. This horrible practice, of course, made specific vulvitis very common among the little girls of these communities. This case, from the history, we can safely regard as a simple catarrhal condition in a strumous child. The bowels should be regulated, a nutritious diet given, with the administration of twenty drops of syrup of the iodide of iron three times daily. As to local treatment, I have had good success with a glycerite of tannic acid (3ii to f3i), applied with a camel's-hair brush after cleansing and drying the parts. If necessary, the strength of the application may be increased to fifty per cent.

#### EPILEPSY.

CASE V.—This little girl, seven years old, has had epilepsy since the age of four. Her seizures have never been more than two weeks apart, and at these times she often has as many as eight or ten spasms during the day. Her mother describes the typical convulsion with which you are familiar,—the outcry, unconsciousness, general clonic spasms and frothing at the mouth, followed by deep sleep, from which she awakes without recollection of the circumstance. It is unusual for a child so young as this to have the graver form of epilepsy.

Her disease began, as we are told, with a petit mal, but rapidly developed into the graver type. She has been taking the mixed bromides, which are more efficient in this form of the disease than a single bromide salt, and she has had no recurrence for a month. The following prescription will give an idea of the plan of treatment:

R Potassii bromid.,  $\mathfrak{z}$ i;  
 Sodii bromid.,  $\mathfrak{z}$ ss;  
 Ammonii bromid.,  $\mathfrak{z}$ ii;  
 Syrup simplicis, f  $\mathfrak{z}$ ii;  
 Aquæ gaultheriæ, q.s. ad f $\mathfrak{z}$ vi. M.  
 Sig.—Teaspoonful three times a day.

If she have another seizure, we will increase the dose by a half; and if this is ineffectual we will double the dose. The bowels must be regulated, and a meat diet forbidden. I believe that meat does harm in these cases because children are disposed to bolt their food, and meat in a half digested condition is especially apt to set up reflex irritation.

## THE TREATMENT OF HIP-DISEASE.\*

BY EDWARD BORCK, A.M., M.D.,

St. Louis, Missouri.

MR. PRESIDENT AND GENTLEMEN :—As we are all familiar with the anatomy and physiology of the hip-joint, it needs no repetition. The pathology of the diseases of the hip, however, deserves further investigation.

The diagnosis in the second and third stage of coxitis presents no great difficulty. The prognosis depends upon circumstances. As to the question of etiology, my views will be expressed during my remarks.

I offer this paper for the consideration of the treatment of coxitis, soliciting a discussion thereupon, especially upon the treatment of the second stage of this disease. And why the second stage? For the reason that the surgeon very rarely sees these cases in the very beginning or the incipient stage of the malady. When the surgeon is consulted, the patient has, in the majority of cases, already advanced into the second stage,—that is, the stage of serous or synovial effusion, with the characteristic deformity and other symptoms, such as great pain. And too often the patient does not come under the surgeon's care until the third stage has developed.

In such a case the previous stages cannot interest him any more; the good that might have been obtained by proper treatment during the first stage, if it had been recognized in time,

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\* Offered for discussion before the Surgical Section of the Tenth International Medical Congress, held at Berlin, Germany, August, 1890.



or the benefit of treatment during the second stage, in which the diagnosis cannot be doubtful, cannot well be mistaken. These chances for the patient are gone forever. Admitting the above, it is easily seen why the second stage is the most interesting to the surgeon, and very important to the patient.

Operative interference, during this stage, offers much better results for the complete recovery of the patient from the attack than any other method. If we can cure the patient during this stage, we avoid the annoyance of the third stage both to patient and surgeon; for the recovery from the third or suppurative stage is very uncertain, and, notwithstanding all the care and pains that might be taken, complete recovery never takes place.

Therefore, the second stage of hip-disease seems to me the most important. I will not speak of the different methods heretofore employed or recommended now, neither do I pretend to offer mine as entirely new, for it is, an old saying, "There is nothing new under the sun," but I will say that previous to my employing my plan of operating, I had not seen it done by others nor read any accounts of it.

I called attention to this method at the American Medical Association (Section on Diseases of Children), which met at Newport, Rhode Island, in June, 1889.

It occurred to me in this way: having seen a good number of cases in the third stage where suppuration, accompanied by great pain, had already taken place within the capsule, the pain immediately ceased upon the spontaneous rupture of the capsule, the patients were comfortable for the time being, but the destructive process would progress.

Now, I argued, if the effusion could be got rid of completely by some medical means of operating, before suppuration had time to begin,—that is, during the period of effusion, when the exudate is yet but serous or synovial (and I wish to be distinctly understood that I consider this the second stage, though the line of division where the first stage ends and the second stage begins may be difficult to determine),—such a course would assist nature, and would be crowned with better results than to depend upon the uncertain method,—waiting for nature to absorb the fluid, losing valuable time, and generally gaining much disappointment thereby.

No exudate can be absorbed as long as it remains enclosed within the capsule; spontaneous rupture does not take place during the second stage, or must be very rare. I have never observed it. It is only by suppurative process that such a strong capsule can be destroyed and ruptured.

I have tried to accomplish the object with the aspirator, but

with no flattering results. I then put my theory of subcutaneous division of the capsule into practice as follows :

A small incision is made into the skin over and posterior to the trochanter major; with a strong probe, or a dull, grooved director, I explore my way, separating the tissues down to the capsule. A small knife with a long neck, such as a tenotome, is then inserted alongside of the director (guide) down into the capsule; separating it freely, the fluid escapes into the surrounding tissue, and is then absorbed. There is but very little hemorrhage. The patient then enjoys rest. The parts are put in complete fixation with a pair of wire breeches, or similar apparatus that will answer the purpose. Nature, assisted by hygienic treatment, completes the work; the patient recovers within two or three months. According to my experience, nothing can be accomplished with the so-called extension and counter-extension.

It seems to me that instead of a grooved director or probe, a small canula, like a female catheter, with a round, smooth point, and a longitudinal opening into the side, would answer the purpose better. The knife could be inserted into this tube, thereby protecting the soft tissues from any injury; at the same time a good deal of the fluid might escape externally through the canula.

This method of treating the second stage of coxitis answers admirably well in all the cases where the disease is caused by an injury such as a blow or fall. The traumatic origin as an exciting cause of coxitis is predominant, at least in our Western Hemisphere. The constitutional origin is the exception, though local tuberculosis may be a factor in some of these cases.

After all, it may not matter much what the cause of the production of the exudate depends upon. If it is once produced, and it remains within the capsule, it is bound to do mischief. The object is to remove it; the sooner the better.

In time the hitherto existing fear of opening the capsule of a joint will disappear with the progress of modern surgery.

I now take pleasure in presenting to you for examination two of my little patients who were affected with an exudation of the capsule of the hip, caused by an injury. I operated upon both at nearly the same time about two years ago. This little fellow here is now eleven years old, of poor parentage, and with surroundings not to be envied; the other is about fourteen years old, blessed with better and more comfortable earthly goods. You will find a very small cicatrix upon the left side of both patients; otherwise no one could tell at present that they ever were in peril of losing the usefulness of their limbs. They are in perfect health, bright and lively.

## **Clinical Memoranda.**

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### **SYMPTOMS OF BULBAR PARALYSIS IN A CHILD, FROM A SCROFULOUS TUMOR OF THE PONS VAROLII, INVOLVING THE FOURTH VENTRICLE.**

BY JAMES FINLAYSON, M.D.,

Physician to the Glasgow Western Infirmary, and to the Royal Hospital for Sick Children, Glasgow; Honorary Librarian to the Faculty of Physicians and Surgeons, Glasgow, etc.

BULBAR PARALYSIS, as understood in the adult, seems never to occur in the child. In the case here described the patient presented many of the symptoms and appearances of labio-glosso-pharyngeal paralysis; indeed, from these symptoms, and from the position of the lesion found, the case might be described as one of bulbar paralysis; but the cause of this paralysis was a scrofulous tumor of the pons, involving the fourth ventricle and the important nerves which arise there.

The patient was a boy seven years old, admitted, on April 23, 1885, to the Glasgow Western Infirmary. His speech had very much of the peculiar quality found in bulbar paralysis; he had, on admission at least, much difficulty also in protruding and moving the tongue in certain directions, although this difficulty passed away to a great extent. It subsequently seemed as if the change in the articulation were due to an affection of the palate more than of the tongue and lips. The saliva dribbled from the mouth, especially on the right side. The lips were not exactly paralyzed, but they were shut less firmly than natural. The vocal cords were not paralyzed, but during the laryngeal examination an extremely insensitive state of the palate and fauces were revealed; the epiglottis and adjacent parts could be tickled without exciting reflex movements. There was, however, no difficulty in feeding him, as regards choking or coughing. He could blow out a taper when asked to do so. The aspect of the cheeks suggested the idea of flabbiness there, and the face was rather expressionless.

Another set of paralytic symptoms also existed. The power of the muscles of the neck varied much. Sometimes he could hold up his head fairly; at other times it often drooped forward. His eyelids had usually the appearance of



drooping, but he could lift them well enough when asked to look up. He had a marked convergent squint, the left eyeball being the one which deviated. The squint was found to be due to paralysis of the external rectus on *both sides*. On testing the eyeballs separately, it was found that he could not take the right eyeball beyond the middle line; the left could not be taken quite up to the middle line. The lateral movements were much impaired, and it was thought, at first, that the *internal* recti were weak as well as the external. At a subsequent examination, Dr. Thomas Reid confirmed the existence of a double paralysis of the sixth nerve, which he regarded as probably of nuclear origin; in this view the weakness of the *internal* recti also might be accounted for, as it is found that the associated movements of the external and internal rectus, on opposite sides, may suffer in nuclear paralysis of the sixth nerve.\* There was no other indication of any paralysis of the third nerve. The drooping of the eyelids was not clearly paralytic, as the boy could raise them when asked. He could look up and he could look down very well; and there was no affection of the pupils, either as regards size or sensitiveness to light. Towards the end of the illness the lateral movements of the eyeballs, in both directions, were extremely slight, although he could look up and down as before. The vision seemed good, and so far as Dr. Reid could examine the optic nerves (under difficulties no doubt) they seemed normal. The ears and the hearing, as investigated by Dr. Barr, seemed normal. There had been no otorrhœa. The arms and the hands were extremely weak and shaky. This was well seen on getting him to try to clap his hands; they were both equally bad. He could walk a few yards, for some time after admission, with a little assistance; but the legs were very shaky also, especially the right. The knee-jerks were exaggerated on both sides. The condition of the arms and legs varied much from time to time, just as the muscles of the neck did. Latterly he became extremely feeble in both upper and lower limbs. He passed urine and fæces without warning; the urine was free of sugar and albumen.

During his residence in the ward, he did not complain of headache, and no vomiting occurred at any time. At the beginning, he seemed unusually hungry, swallowing food somewhat greedily; latterly he fell off his food.

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\* See remarks by the author regarding another child: "Case of Tumor of the Floor of the Fourth Ventricle, with Conjugate Deviation of the Eyes, due to Paralysis of the Sixth Nerve" (*Glasgow Medical Journal*, April, 1888, vol. xxix. p. 338).

He died on June 28. For some time before this he had become very feeble in his limbs, very restless, much duller in his manner, and quite unable to articulate, although he tried to speak; the dribbling of the saliva had become worse. His temperature was only slightly elevated on a few occasions. The end was ushered in by quick breathing, but no convulsions occurred. The history of the case carried the illness back to Christmas, about four months before admission. He had been at school in the summer before that, but had been removed then, owing to his father being ill. He seemed to have been quite intelligent before his illness, and even on admission he was not obviously deficient in this respect. There was some history of phthisical disease in his maternal grandfather and in one of his children.

At the new-year time headache set in; and very soon thereafter squinting appeared. Staggering in his walk also came on about the same time: he was then able to go about the house, but not down-stairs. The dribbling of saliva appeared about the same time. No vomiting occurred.

A new phase of the illness was developed suddenly on April 8. His mother was out of the house for a short time, and on her return she found him lying on the floor speechless, but apparently quite sensible. In three or four days he began to speak a little, and even improved in this respect for a time; but articulation continued very bad, and as described on admission. After this sudden illness his arms became so shaky as to interfere with his feeding himself, but no choking occurred while eating.

The post-mortem examination was made by Dr. Coats.

A tumor was found in the pons varolii: it measured one and one-half inches in transverse diameter, and one and one-fourth inches from before backward. It occupied the posterior part of the pons; so that on dividing the cerebellum in the middle line, and turning it aside, the tumor was found projecting in the form of an irregular, bulging prominence. The anterior part of the floor of the fourth ventricle was stretched over the tumor posteriorly; the lower part of this stretched portion was about three-fourths of an inch above the lower extremity of this ventricle. The corpora quadrigemina were infringed upon and softened in front. The pons varolii and the peduncles of the brain were much softened, especially on the right side, where the softening extended farther forward than on the left. The softening also involved part of the corpora quadrigemina, which had been stretched over the tumor, or at least pressed upon by it. The lateral ventricles were distended with fluid, with some softening of the part

behind. There was no tubercular meningitis, but a little cedema of the membranes on the surface.

Microscopic examination showed the tumor to have the usual characters of the scrofulous or tubercular growth,—round cells, with giant cells superficially, and caseous matter forming the bulk of the mass.

The other organs were normal, except that there was a small, irregular cavity in the left kidney.

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## PHENACETIN IN PERTUSSIS.

BY GEORGE C. IRWIN, M.D.,

Sabetha, Kansas.

• ABOUT one year since I reported a case in the ARCHIVES, giving my experience with phenacetin in pertussis. Since that time I have passed through a severe epidemic of the disease, and have administered it to all ages, with relief in every case, and in some, beyond my expectations, giving relief where the paroxysms threatened suffocation before its administration. In no case has its use been followed by any unpleasant results. As before, it was administered in glycerin, which is its best solvent, and I claim that its use will relieve in all cases, and cut short the duration of the disease. As far as I know, I was the first to claim its merits in this disease.



## Foreign Correspondence.

### LETTER FROM PARIS.

(Special Correspondence to the ARCHIVES.)

Infantile Medicine—Indications for Sea-Bathing for Children; Contra-indications—Na-Au-San for the Treatment of Diphtheria.

*Infantile medicine.*—Professor Grancher, who holds the official chair of children's diseases in the Paris Faculty of Medicine, lately gave an interesting lecture on this subject. He said that West, Roger, and Valleix held that "children's diseases were like a new country, where the explorer heard a language unknown to him." Henoch claimed that it certainly needed special study when infants' troubles were in question; not that age changes the laws of general pathology, but it is sufficient to make a special form of pathological medicine. Dr. Grancher gives the reasons for this:

1. Certain diseases belong exclusively to infancy. Parrot, finding that children at the breast suffered mostly from some portion of the digestive tract, created the word *athrepsia*. Most often, however, the vomiting, colic, diarrhœa, are passing phenomena, with or without convulsions, and are closely in relation to some hygienic fault, or else a chill, or dentition. Hereditary syphilis is also seen at this age by physicians accustomed to study infants, and not by those who do not. Later, from two to seven years, rickets, croup, laryngitis, etc., chorea, and cardiac malformations are now met with.

2. Certain diseases may be the same in adults, but their evolution is different in children. Coryza, eczema, trichophyton, typhoid fever, all differ entirely. Tuberculosis, formerly known as *scrofula*, is quite a special form of children's diseases, the prognosis of which is quite different from the same malady in the adult, even when it is pulmonary in character, just as diphtheria is more serious in infants than in adults.

3. Children's diseases have a special therapeutics. This is true not only for doses, but also for the action of drugs on the infantile economy at different ages.

This rapid view of infantile medicine is quite enough to

legitimize the independence and the importance of this branch of medicine,—*pediatrics*.

It has also a *special technique*, for the *examination* of a child is a very delicate matter, where the sagacity and ingenuity of the physician must be exercised to its highest limits. The infant in arms must be examined naked, as a correct notion can only be had in this way of its conformation and nutrition. Next comes special examination of the organs,—throat, liver, spleen, abdomen, etc.,—which is made in the usual way; but with the infant the doctor needs special means, as he has not only to make a correct diagnosis, but he must meet the constant agitation of the child itself, and the stupidity of the nurse, with the weakness, not to say cowardice, of the mother. Delicacy of touch and firmness must be combined with quickness and kindness.

The infant must be handled quickly and lightly, the throat must be seen at a glance, while the respiratory murmur must be caught at once; at the same time palpation must be made for the deep organs, softly and yet profoundly.

The questions must be precise, while the language used should be quiet but decided. Finally, the directions must be clear and simple. After two years of age a child is intelligent enough for a physician to work on its character. If it is amiable, a toy, a little candy, a caress, will not be lost in gaining its confidence. Again, however, the examination *must be made* notwithstanding its cries; and it is astonishing how quickly even a spoiled child will be quiet under the firm will of a doctor just as soon as it sees the superior will against him. If the child is asleep, get his pulse, respiration, attitude, and study him at once. But if he is awake, then do not notice him at first, but speak only to the mother or nurse, and let him get accustomed to your voice and face. This interrogation of the parents is of the highest importance in infantile medicine, as the little patient says nothing at all, or, if he speaks, he will most likely fool the doctor by pointing to some spot where he may have a reflex pain, but which is not the real one. The parents, unless they are unusually intelligent, will most likely dilate on the *why* and *wherefore* of the trouble, which is, of course, much more than they know, and they are quite incompetent to judge of cause or etiology, so that the physician has to depend on a clever cross-questioning of his own for correct information, and follow this by a study of the objective symptoms, such as form of head, *facies*, state of skin, bones, fatness or thinness of the child, etc.; then the pulse, respiration, circulation, and palpation, with percussion of the deeper organs. Make, in fact, a *complete* examination. Not

finding any deformation, or anything wrong, the doctor must then fall back on the prominent symptoms for a diagnosis.

Dr. Grancher attaches considerable importance, in doubtful cases, to a study of the pulse when the child is asleep, or when he is made to sleep under two grammes of chloral.

In every case in children's diseases all prudent doctors should not hurry to give a definite opinion, as the symptoms vary much, as well as the pulse, under the influence of crying and bad temper in the child.

The diagnosis of typhoid fever in children from two to three years of age is very difficult to make. The fever is not cyclic, the diarrhœa is not the same, as in the adult also; and yet it is just at this age when typhoid is dangerous. Later, at five to six, it has the usual symptoms, and is not so fatal. Perhaps the most difficult diagnosis to make is that of pulmonary tuberculosis, and yet it is the most frequent of all diseases. The child cannot regulate his thoracic muscles for you, and you are at a loss to perceive the difference in the chest-sounds. The localization of the usual signs is also not so constant nor so precise as in the adult. In place of being at the summit, they may be, and often are, in the middle lobe, or the inferior one, or they may be so diffused that nothing is definite enough to make a diagnosis. We have nothing to do but wait, as we have not even that *netima ratio*, the microscopical examination of the sputum, as the infant cannot spit, except "into its stomach," as Professor Peter says. But we need not wait to undertake a treatment in any suspected case; it is better to begin at once.

The difficulties of children's medicine is not over even at eight, ten, or twelve years of age. Many nervous, hysterical girls and boys will mislead many doctors now more than ever, and it is for him to judge, by the character of the child, if he relate true symptoms or seek to deceive. It is a grave error to suppose the popular saying to be true that "truth is found in a child's talk,"—certainly not in medical matters. Suggestion and *auto-suggestion* is rife among children more than adults. They will *play a part* better than their elders, just for the notice it brings to them, and *invent* a complete story, which they stick to so well as to fool many. But the children's physician must not be taken in, even if the parents be deceived by the smart boy or girl. Hysteria, epilepsy, and other troubles are frequently pretended by them.

The part taken by the first and second dentition is very important in all children's troubles, and must be sought for.

Besides all these special troubles, all the common diseases of adult life are seen in children, so that their pathology is



not a little corner in general pathology, but consists of *all* of it; and to succeed in children's diseases the physician must have more gifts than the usual doctors,—he must have more tact, more instruction, more goodness, and, as one of the best of them said, “In general medicine, if you like your profession, you will succeed, but in infantile medicine you must in addition like and love your patients.”

*The indications for sea-bathing for children.*—Dr. Gillet says in a late article that a physician ought not only give good hygienic advice, but also state the indications and contraindications as well for it. A sea-side cure consists of aërotherapy and hydrotherapy. It is, in fact, a permanent bath of sun, salt air, and salt water. Sea-air, we know now, has a very small proportion of microbes in it; it contains ozone, water-vapor, and salts in a state of suspension, which has a general exciting action on the whole system. Circulation, respiration, hæmatosis, appetite, and the nervous system are all pushed to their highest limits of activity.

This may, and does, produce sometimes an over-exaggeration and restless, excited sleep that has been called “marine fever,” and is similar to the “thermal fever” produced by too long continuance in drinking mineral waters, or inhaling their vapors, and which is best cured by leaving the sea-side, at least at night, rather than by giving antipyrin.

Different effects are produced at different sea-side resorts, and Dr. Gillet describes those of the French coast, where the climate of the ocean is different to that of the Mediterranean Sea, and so on; but no doubt a most interesting study could be made by our American physicians of the different effects, in a therapeutical point of view, that can be got from the various sea-side places from Maine to Florida.

The therapeutical indications as regards children are in favor of sea-side places for all the weak adolescents who are growing too quickly; for anæmic children; for chloretics and the so-called scrofulo-tubercular cases when they have no external manifestations; for all children who have adenoid growths of the pharynx and rickets; and, finally, for all those of tubercular parentage, as long as their disease is torpid and does not present any tendency to congestion or hæmoptysis. These last even do well in the *warm* coast places.

As to *contraindications*: All irritable children, hysterical, epileptic, those too weak or too young, and eczema with eye-cases, blepharitis, etc., should not be allowed to go to the sea-side. However, it is possible, by a careful study of the exciting and *non-exciting sea-side resorts*, that even these cases could be sent to some of the last-mentioned places.

The doctor's duty is not over, though, when he finds the right place for his little patients. He must say if the child may go direct to the sea-side, or stop at an intermediate station ; then if the baths should be first taken *warm*. The important point is to see that it gets a good reaction. As a rule, short baths are best. One a day of five minutes' duration, taken during a rising tide, is a good rule.

The new mode of existence also demands a careful alimentation. It should consist of unirritating foods,—no spices or peppers, no wine, coffee, tea, or liquors. The appetite must not be over-indulged, as it will lead to constipation, and it is well not to drug children at the sea-side. The water itself acts as a laxative ready at hand. It is probable that sea-water is an excellent medicine for infants, and that good is obtained by allowing them to take small doses of it.

*Na-au-san* for the treatment of diphtheria.—In English India, the Malay Islands, and in China, a popular remedy, used with much success, called as above in Chinese, has been lately introduced by M. Lecerf in France. In a communication he made to the *Société de Médecine pratique*, of Paris, he stated that in Java even the best doctors give it in their own families when they are attacked by a throat complaint. In China, as is well known, the practice of medicine is free ; there are no diplomas, and any one that chooses becomes a doctor. The method above spoken of is not a secret, as it is spoken of in the *Pen-Asan-Rang-Mou*, a Chinese materia medica, written three hundred years ago, although the present Chinese physicians pretend to keep secret certain parts of the treatment or the prescription. The treatment consists of blowing a powder into the throat, using a decoction of plants as a gargle and drink, and some hygienic advice.

The powder is called *sin-seh*, and, from various studies made of it, it consists of borax, camphor, powdered pearls, cinnabar, acetate of copper, and charcoal. There are often a number of other ingredients, such as musk, and some vegetable powders of no great merit. This is blown through a paper tube, every two hours, about twenty to thirty centigrammes at a time being used. The quantities are given as follows :

Borax .....	42.50
Camphor .....	12.
Pearl powder .....	9.85
Cinnabar .....	15.30
Copper acetate .....	1.20
Charcoal, etc. ....	19.15
	100.00

## FRENCH IDEA OF THE FORMULA OF SIN-SEH.

	Grammes.
Perles pulvérisées.....	0.386
Bézoard de bœuf.....	0.772
Racine de coptide pulvérisée.....	0.193
Racine de réglisse pulvérisée.....	0.193
Charbon de pulpe de prune pulvérisée.....	3.088
Camphre de Bornéo.....	0.965
Borax calciné.....	9.658
Cinabre naturel.....	3.088
Acétate de cuivre chinois (Verdet).....	0.193

It is probable that this powder is, above all, antiseptic in its action, first by the borax, next by the camphor, which is the Borneal variety, a sort that is very volatile, and whose therapeutic action is not well known. It is difficult to account for the curative action of this powder, but its efficacy seems not to admit of a doubt. (We enclose the Chinese formula for it, and it seems it can be made by any Chinese). The decoction is as follows: Roots of the coptis teeta, scutellaria viscidula; panax quinquefolium, or ginseng, and platycodon grand; flowers of caprifolium Chinense; fruit of the uvularia cirrhosa; bark of pterocarpus flavus; capanus flavus root and glycyrrhiza glabra. About fifty grammes of each are boiled in a pint of water until it is reduced to two hundred cubic centigrammes. This is filtered, allowed to cool, and given in three doses during the twenty-four hours. The mouth is ordered to be washed out before taking.

As to the regimen, the patient is kept in bed, and the room aired without making a draught. No ice, cold drinks, or sugar is allowed, nor any fatty matters. Fruits are also forbidden. Baths are not allowed at all. At first the alimentation consists of boiled rice, eggs, and salt fish; later, boiled chicken and bread is permitted. The drink consists of water that has been boiled.

A large number of cases are cured in three days; and one doctor, who states he has at least ten cases of diphtheria per year, never loses one. In any case the results seem good, and as the plants used are harmless, it would be well that modern medicine, that uses any good thing, no matter what its origin, should at least inquire into the ancient Chinese method. Many of the plants used are not common, but still all of them could be had by the enterprising agents of our drug-houses in China.



## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Farlow, J. W.: Use of Resorcin in Whooping-Cough. (*Boston Med. and Surg. Journ.*, 1890, cxxii. 198.)

He uses resorcin in a two-per-cent. aqueous solution, which is sprayed, by means of compressed air, into the nose, pharynx, and larynx every two hours. Of this strength, it has practically no taste, no odor, does not irritate the mucous membranes, and is not poisonous. It seemed to the author that the results obtained were positive, speedy, and lasting.

Sherman and Gibney: Report of Two Cases of Death in Young Children during the Administration of Chloroform. (*Med. Rec.*, New York, 1890, xxxvi. 289.)

Dr. Sherman's case was a boy aged five years. Chloroform was given in the usual way, and anæsthesia was easily produced. Some tuberculous sinuses were curetted. At the bottom of these was found a small patch of carious bone, and as the child began to move, a little more chloroform was put on a towel and the scoop applied to the bone. At this moment the child ceased to breathe. The child was inverted, and artificial respiration done for a few moments, when the functions were restored. Color returned to the face, and the danger seemed past; but after twenty or thirty respirations they again ceased, though no more chloroform was used. The heart stopped, the face blanched, and the pupils dilated. Artificial respiration was again practised, the child inverted, stimulants, such as whiskey, ammonia, digitalis, and nuxvomica, were given hypodermically, hot and cold water applied alternately to the chest, and the battery was used, but nothing had the slightest effect, and, after an hour's work, the case was pronounced hopeless, and further efforts abandoned. This particular child had taken chloroform three times before, and at each time more chloroform had been given, and anæsthesia had been longer than on the fatal occasion; for then anæsthesia had been established not longer than one and a half minutes, and not more than a drachm of chloroform had been poured on the towel.

Dr. Gibney's case was a girl, two years of age, with a sacral spina bifida. The tumor was evacuated by means of a hypodermic needle, and the sac injected with Morton's fluid. The whole operation lasted about ten minutes, during which time the child was not profoundly anæsthetic, but cried out occasionally. During the application of the dressing, however, the lips became blanched, the pulse feeble; but after a hypodermic injection of morphia, the breathing at once became more regular, pulse a little better. Very soon after this the pulse grew feeble again, and the patient ceased to breathe, and all efforts at resuscitation proved of no avail. At the autopsy no cause was found for death.

**Hyderabad Chloroform Commission.** (*Med. and Surg. Rep.*, Philadelphia, 1890, lxii. 181.)

The following are the practical conclusions which the Commission think may fairly be deduced from the experiments recorded in their report:

1. The recumbent position on the back and absolute freedom of respiration are essential.

2. If, during an operation, the recumbent position on the back cannot, from any cause, be maintained during chloroform administration, the utmost attention to the respiration is necessary to prevent asphyxia or an overdose. If there be any doubt whatever about the state of respiration, the patient should be at once restored to the recumbent position on the back.

3. To insure absolute freedom of respiration, tight clothing of every kind, either on the neck, chest, or abdomen, is to be strictly avoided; and no assistants or by-standers are to be allowed to exert pressure on any part of the patient's thorax or abdomen, even though the patient be struggling violently. If the struggling do occur, it is always possible to hold the patient down by pressure on the shoulders, pelvis, or legs, without doing anything which can by any possibility interfere with the free movements of respiration.

4. An apparatus is not essential, and ought not to be used, as, being made to fit the face, it must tend to produce a certain amount of asphyxia. Moreover, it is apt to take up part of the attention which is required elsewhere. In short, no matter how it is made, it introduces an element of danger into the administration. A convenient form of inhaler is an open cone or cap with a little absorbent cotton inside at the apex.

5. At the commencement of inhalation care should be taken, by not holding the cap too close over the mouth and nose, to avoid exciting, struggling, or holding the breath. If

struggling or holding the breath do occur, great care is necessary to avoid an over-dose during the deep inspirations which follow. When quiet breathing is insured as the patient begins to go over, there is no reason why the inhaler should not be applied close to the face; and all that is then necessary is to watch the cornea, and to see that the respiration is not interfered with.

6. In children, crying insures free admission of chloroform into the lungs; but as struggling and holding the breath can hardly be avoided, and one or two whiffs of chloroform may be sufficient to produce complete insensibility, children should always be allowed to inhale a little fresh air during the first deep inspirations which follow. In any struggling persons, but especially in children, it is essential to remove the inhaler after the first or second deep inspiration, as enough chloroform may have been inhaled to produce deep anæsthesia, and this may only appear, or may deepen, after the chloroform is stopped. Struggling is best avoided in adults by making them blow out hard after each inspiration during the inhalation.

7. The patient is, as a rule, anæsthetized and ready for the operation to be commenced when unconscious winking is no longer produced by touching the surface of the eye with the tip of the finger. The anæsthetic should never, under any circumstances, be pushed till the respiration stops; but when once the cornea is insensitive, the patient should be kept gently under by occasional inhalations, and not be allowed to come out and renew the stage of struggling and resistance.

8. As a rule, no operation should be commenced until the patient is fully under the influence of the anæsthetic, so as to avoid all chance of death from surgical shock or fright.

9. The administrator should be guided as to the effect entirely by the respiration. His only object, while producing anæsthesia, is to see that the respiration is not interfered with.

10. If anything interfere with the respiration in any way, however slightly, even if this occur at the very commencement of the administration, if the breath be held, or if there be stertor, the inhalation should be stopped until the breathing is natural again.

11. If the breathing become embarrassed, the lower jaw should be pulled, or pushed, from behind the angles forward, so that the lower teeth protrude in front of the upper. This raises the epiglottis and frees the larynx. At the same time it is well to assist the respiration artificially until the embarrassment passes off.

12. If by any accident the respiration stop, artificial respiration should be commenced at once, while an assistant



lowers the head and draws forward the tongue with catch-forceps, by Howard's method, assisted by compression and relaxation of the thoracic walls.

13. A small dose of morphia may be injected subcutaneously before chloroform inhalation, as it helps to keep the patient in a state of anæsthesia in prolonged operations. There is nothing to show that atropine does any good in connection with the administration of chloroform, and it may do a very great deal of harm.

14. Alcohol may be given with advantage before operations under chloroform, provided it does not cause excitement, and merely has the effect of giving a patient confidence and steadying the circulation.

The Commission has no doubt whatever that, if the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and absolute safety, so as to do good without the risk of evil.

**Moncorvo: Digestive Disorders in Children and their Diagnosis by Means of the Chemical Examination of the Gastric Juice.** (*Arch. f. Kinderh.*, xi. 5 and 6.)

The conclusions of this paper are as follows:

1. In Brazil disorders of digestion in children are extremely common.

2. The high temperature of the tropics during the long summer exercises a powerful influence on the development of gastric disorders, especially on account of the excessive sweating which is caused by the heat.

3. In children more than two years of age gastro-intestinal disturbances often coexist with dilatation of the stomach.

4. From birth until the end of the second year of life insufficiency of the gastric function is almost always caused by diminution or total absence of the free hydrochloric acid in the gastric juice.

5. In the subsequent years of life there are occasionally cases in which there is an excess of acidity in the stomach, but want of acidity or deficient acidity is the rule.

6. The remedy for deficiency in the supply of acid in the gastric juice lies in the proper use of hydrochloric acid.

A. F. C.

**Brinton: The Treatment of Intussusception.** (*Arch. f. Kinderh.*, xi. 5 and 6.)

Of five hundred cases of fatal intestinal obstruction collected by the author, two hundred and fifteen were due to invagination of the intestines. The most common methods

of treatment consisted in the introduction of an elastic bougie into the rectum, the injection of a large quantity of warm water, and the injection of air. The latter method has been frequently successful in children, especially if practised with the aid of an anæsthetic. Such procedures must not be continued too long and must not be too violent. In some cases success has been attained only after repeated trials, and the danger of rupturing the intestine must not be forgotten.

With reference to the operative treatment of intussusception, Barker has collected sixty-three cases in which laparotomy was performed, relief being afforded in thirty-four. If an operation is to be performed, it is very essential that it be done early in the history of the case. Carver reports a case in which laparotomy was successfully performed for this cause upon an infant seven weeks after the beginning of the trouble.

A. F. C.

Jeffries, J. A.: Sulphonal in Chorea. (*Med. News*, Philadelphia, 1890, lvi. 275.)

Five of the cases were simple chorea,—that is, first attacks of recent origin. These all recovered within three weeks. In two arsenic had failed, in two was never used; in the fifth either arsenic or sulphonal alone failed, but together they were quickly followed by improvement. The other five cases were either of long standing, or second or third attacks; four were at the period of puberty; three of these cases got well at least for a month; in three arsenic had failed, in two was not used. Two have not recovered with any treatment.

All the cases were also ordered a daily sponge-bath, simple diet, and sleep in the middle of the day.

Heller: The Treatment of Lupus. (*Arch. f. Kinderh.*, xi. 5 and 6.)

Lupus erythematosus is first described, and an antiphlogistic treatment is recommended for the first inflammatory stage, cold compresses being of especial value, with the addition of such astringents as a one-per-cent. solution of sublimate with lime-water. In this stage all irritating applications must be avoided, including caustic potash, nitrate of silver, and nitric acid. After the inflammation has subsided, one may use means for removing the inflammatory exudate. But no irritating agents must be used, for with their use too much cicatricial tissue will result. Neither should such means as scarification or curetting with the sharp spoon be employed. The chief aim in the treatment of this disease should be to improve the diseased condition of the blood, for the skin dis-

order is but a symptom of that. Most patients with lupus are anæmic, nervous, etc. Arsenic and iron should be administered internally, and if there be congestion of the head, ergotin should be added. Externally one should use potash soap, red precipitate ointment, mercurial plaster, and other astringents.

In lupus vulgaris a similar line of treatment should be followed, curetting and irritants being avoided. With most cases this treatment will be efficacious, but it is tedious, and one must be willing to wait a very long time before satisfactory results appear.

A. F. C.

**Simon: Etiology and Treatment of Insomnia in Children.** (*Rev. Mens. des Mal. de l'Enf*, May, 1890.)

If the insomnia be due to digestive trouble, the treatment will vary according to the age. It may be caused by too frequent nursing, or because the health of the mother or the quality of her milk are not what they should be. In bottle-fed children, of course, the bottle and its contents must be rigidly investigated. These and other matters of hygiene being remedied, if the insomnia continue, one should give between nursings a teaspoonful of lime-water or of Vals water, and for a laxative a teaspoonful of chicory syrup, or a pinch of magnesia in sweetened water. If a child has been prematurely weaned, it should be restored to the breast, when the insomnia will disappear. For children who have been weaned at the proper period, the regulation of the diet will go far towards relieving any tendency to insomnia. For children two years old or more, the insomnia being dependent on indigestion, use wine of rhubarb or wine of pepsin in suitable doses. For children five or six years of age one may give a few drops of a mixture containing—

R Tinct. quinquinæ, 2 grammes;  
Tinct. rhei, 2 grammes;  
Tinct. calumbæ, 2 grammes;  
Tinct. nucis vom, 0.50 gramme.

All the food which is given them must be well cooked, and must be finely divided if there is any suspicion that it will not be properly masticated.

Insomnia may be due to disorder of the nervous system and from several groups of diseases. The first group includes cerebral sclerosis, chronic hydrocephalus, cerebral tumors, bony lesions with abscess of the brain. Should there be cerebral sclerosis, bromide of potash should be given to the point of relief and tolerance. It may be combined with



the iodide. If these means do not succeed, one must have recourse to suitable preparations of valerian or of chloral. Calomel and other mild purgatives must also be given. The same treatment is indicated for cerebral tumor and chronic hydrocephalus, but not for cerebral abscess. For the latter the pus must be evacuated by trephining. Insomnia may also arise from a second group, including acute congestion, beginning meningitis, and cerebral irritation. For acute congestion mild revulsive agents are indicated, also quinine, aconite, the bromides, and calomel. With beginning meningitis revulsives are also indicated behind the ear or at the nucha. For cerebral irritation the bromides and chloral are more useful than any other drugs, the chloral being given per rectum. In the headaches with insomnia of growing children and young school-children bitter tonics, gymnastics, lukewarm baths, and lessening of the hours of study are indicated. With the neuralgias antipyrin in large doses should be given, the same being true for insomnia from chorea. For hysteria, iron, valerian, assafoetida, and warm baths should be tried. With insomnia from epilepsy, if the bromides are inefficient, strychnia and belladonna should be tried. For all the conditions mentioned galvanization of the head is a most useful agent in adults. If used in children, the current should not be stronger than that from a single Daniell element, and should be continued not more than half a minute. With static electricity less caution is necessary, and the results are admirable if the insomnia proceeds from chorea, hysteria, headache, gastro-intestinal disorder, or disturbed mental balance. In insomnia due to pain, as from Pott's disease, coxalgia, white swelling, etc., large doses of quinine will sometimes bring relief. When insomnia is due to the fevers, opiates must be given, but its use must be guarded in typhoid fever on account of its depressing tendency. The insomnia of influenza may be relieved by quinine or antipyrin, and the same drugs, together with salicylate of soda, are indicated when the rheumatic diathesis acts as a cause.

A. F. C.

**Manasse:** The Use of Terpene Hydrate in Whooping-Cough. (*Therap. Monatshefte*, 1890, No. 3, and *Rev. Mens. des Mal. de l'Enf.*, April, 1890.)

This drug was employed in forty-one cases of whooping-cough, the minimum dose being one hundred and fifty centigrammes daily for children under one year of age, and for older children one hundred and fifty to three hundred centigrammes. No harmful action was produced either upon the urinary apparatus or the digestive organs. Within four or

five days from the beginning of the use of the drug improvement was noticed in the number and character of the paroxysms of coughing. In almost all cases a catarrh of the bronchi was caused by the drug, but this disappeared entirely in a short time. The terpine acts as an antiseptic. The development of bacteria can be arrested in a one to one hundred and fifty solution of terpine, and tubercle-bacilli lose their vitality in a one to four hundred solution. In whooping-cough, terpine does not act entirely as a germicide, for there is always in this disease an inflammatory and catarrhal process of the respiratory mucous membrane. In benign cases the changes are localized in the upper regions of the respiratory passages, but in severe cases there is constantly a bronchial catarrh and often a capillary bronchitis. For these more or less extensive changes of the mucous membrane, terpine is of especial value, for it powerfully modifies the character of the bronchial secretions.

A. F. C.

Hubbard, C. G.: *The Birth of a Very Small Living Child.* (*N. Y. Med. Journ.*, 1890, li. 491.)

The mother thought she was about seven months advanced in pregnancy. The child measured ten inches in length, its head three inches in length, and eight inches in circumference around its ears. Its thighs were two and one-half inches in circumference. Its fingers were but a trifle larger than a knitting-needle. It weighed one pound and two ounces. It cried quite loudly and was well formed. Its finger-nails were perfect, but it was emaciated, with a shrivelled skin. There was no history of any constitutional disease, but the father is intemperate. It lived eight hours.

St. Philippe: *Itching in Scarlet Fever.* (*Rev. Mens. des Mal. de l'Enf.*, February, 1890.)

The question is propounded whether itching is a characteristic of scarlet fever, and the author thinks that the deductions in connection with his investigations upon this subject are of interest to those who are in general practice. Most of the authors and pathologists who have described this disease have very little to say concerning this symptom. It has been observed, however, by the author of this paper in a number of cases. Gissolle mentions the fact that there may be pruritus and heat of the skin to a degree which is not seen in any other exanthematous pyrexia, and similar testimony has been given by Rilliet and Barthez, Sanné, and Hardy. Jaccoud states that scarlatina is sometimes complicated by urticaria, and doubtless refers to that condition of intense pruritus which

may be considered a definite characteristic of some cases. To be excluded, of course, are those cases in which there is a rash resembling that of scarlet fever, which is the external expression of some drug or food which has been taken, or which indicates the existence of a septic condition, and this remark includes cases of so-called puerperal scarlet fever, which, in the opinion of Doléris, is only a septic condition with external manifestations. In most of these conditions there is intense pruritus at the seat of the eruption, and there may also be a febrile movement, which will make the differential diagnosis still more difficult. This teaches the necessity of carefully studying the progress of each case and observing the discordance between the intensity of the eruption and the febrile movement in pseudo-scarlatinal cases. In the latter also the seat of the eruption does not correspond with that which is found in true scarlatina, and the color is of an intense red, which is only found in cases of scarlatina which have very high temperature. Scarlatina must also be excluded if the eruption is papular, tubercular, nodose, or bullous in character. In pityriasis rubra the resemblance of the eruption to that of scarlatina is very close, but with the former desquamation occurs on the third day, in the average of cases, which is not the case with the latter. In pityriasis rubra also there are no changes in the nails nor falling of the hair such as occur in scarlatina. Recurrences of pityriasis rubra are also frequent and constitute another point for differentiation. Forty cases have been seen by the author in which scarlatina was accompanied by itching, its location being principally upon the abdomen and the back. In all these cases there was desquamation, and usually in the form of fine scales. An analysis of the author's forty cases shows that they were mild and never malignant, and this may teach that scarlatina in which there is itching is not a grave form of the disease. In the worst cases the temperature did not exceed 40° C. In none of them was there phlegmonous inflammation of the cervical glands. Adenitis and otitis were present in some cases, and also rheumatism, but never in a severe form. There were no disorders of the nervous system, and albuminuria in only a few instances. The following are the author's conclusions:

1. Scarlatina is often a disease which is accompanied by itching.
2. This variety usually has a favorable prognosis.
3. The itching is due to the fact that the eruption is not intense and the cutaneous lesion not very profound.

A. F. C.



## II.—MEDICINE.

Ayres, Samuel: Diphtheria. (*Kansas City Med. Rec.*, 1889, vi. 401.)

He advocates the use of hydrogen peroxide, especially in those cases in which the nasal passages are involved. It is little less agreeable to the taste than water, it is perfectly harmless when swallowed, and while exerting a powerful action on dead tissue or discharges, is without unpleasant effect upon the most sensitive parts. When applied freely and frequently it rapidly disintegrates the false membrane.

Turner, S. S.: Diphtheria at High Altitudes. (*Med. News*, Phila., 1889, lv. 515.)

He saw his first series of cases in Dakota, which has an elevation of from one thousand to three thousand feet above the sea. Here he treated seven cases, of which five died. He next encountered the disease at Fort Buford, which is two thousand feet above the sea. He had five cases, and four of them died. Five years later, Fort Buford was revisited by this scourge. At this time there were eight cases with six deaths. From these cases he drew the conclusion that in a northern atmosphere of great rarity and purity, with only moderate elevation, diphtheria is the most fatal of prevailing maladies.

Wohlgemuth: Pathology and Treatment of Scrofulo-Tuberculous Tumors of the Lymph-Glands. (*Arch. f. Kinderh.*, xi. 5 and 6.)

The following are the conclusions:

1. Tuberculous glandular disease is very common during the first ten years of life.

2. In the majority of such cases the disease involves the glands of the neck.

3. Males and females are alike susceptible to the disease during this period.

4. The prognosis of local tuberculosis of the glands in young children is usually better than in adults.

5. Cases of diffuse tubercular disease of the cervical glands have a less favorable prognosis than those which are more local in character.

6. The operative removal of tuberculous glands in children is not a dangerous operation, nor, if the diseased tissues are thoroughly removed, is there danger of local recurrence or of general tuberculosis. Radical means should therefore be employed in the treatment of tuberculous glands. A. F. C.

Allen, C. L.: A Case of Plastic Bronchitis in a Child. (*Med. Rec.*, New York, 1890, xxxvii. 376.)

The patient was a female and previously fairly healthy. She was seven years old. She was taken sick, complaining of pain in the left side of her chest and of nausea. The next day she was worse, vomited occasionally, and some cough. On the third day, when she was seen by Dr. Allen for the first time, her face was flushed and she appeared to have considerable dyspnoea. Axillary temperature, 103.3° F.; pulse, 150; respiration, 60. On physical examination there was found some dulness and a few fine râles below the left clavicle; breathing slightly bronchial; then, a little lower, a slightly tympanitic percussion note. On the next day she was seized with a fit of dyspnoea, and coughed up a cast three inches long and three-sixteenths inch at its greatest diameter. This gave her prompt relief. The physical signs remained about the same. No membrane could be detected upon the fauces. No albumen in the urine. On the sixth day she coughed up a second cast, two and one-half inches by one-fourth inch. After this she made a good recovery. At no time did she have any laryngeal symptoms. The treatment was only that of ordinary catarrhal bronchitis. On microscopic examination, the cast was found to consist of fibrin, with a large number of leucocytes.

Kerley, C. G.: Three Cases of Pulmonary Tuberculosis in Young Infants. (*N. Y. Med. Journ.*, 1890, li. 518.)

In twenty autopsies upon cases of infantile tuberculosis, the following distribution of lesions was found: In seventeen there was a fairly even distribution of tubercle on surface and in substance of the lung. In one the tubercles were confined to the left lower lobe, in another very few tubercles were found, and in the remaining case the lung was free. There was tuberculosis of the lung in every case but one, of the lung only in two. In twelve of the twenty cases were found cavities in the lungs, the cavities varying in size from a hazelnut to an English walnut. In five of the remaining eight there were cheesy nodules, some of which were beginning to break down. The organs were involved in the following order of frequency: Lungs, nineteen; spleen, fifteen; brain, eleven; liver, nine; intestines, ten; kidneys, three; peritoneum, one; and pericardium, one. In the spleen, liver, and kidneys, as a rule, there were but few tubercles, and these mostly on the surface. The spleen was enlarged in five cases; in one it was three and in another five times the normal size. The liver was pale and fatty in seven. The bronchial glands

were enlarged in every case; enlarged and cheesy in eleven. The condition of the mesenteric glands was noted in fifteen cases; they were enlarged in every case, and in six cheesy and broken down. A positive tubercular history in three only.

**Morris, M. A.:** Three Cases of Acute Thoracic Diseases in Children simulating Meningitis. (*Boston Med. and Surg. Journ.*, 1890, cxxii. 246.)

Such cases suggest the necessity of a thorough examination of the chest, even in children, presenting the symptoms of intracranial disease. Two of the patients were supposed to have tubercular meningitis, and an unfavorable prognosis was given in each, but they both recovered. In the third one the nervous symptoms were so prominent as to leave some question whether there was not really some serious brain-trouble in addition to the pneumonia.

**Dunlop, Andrew:** Acute Follicular Tonsillitis. (*The Lancet*, February 15, 1890.)

This disease is an interesting one, both on account of its frequent prevalence as an epidemic, and of its apparent relationship to diphtheria.

When a case of follicular tonsillitis is seen where one or both tonsils are covered or partly covered by secretion, the resemblance it bears to one of true diphtheria is striking.

Sometimes the matter acquires an ashy gray tint. It will be found, however, that the friable material, so different from tough membrane, can be easily scraped away.

Acute follicular tonsillitis very frequently appears in an epidemic, and it is therefore probably infectious. Its spread has sometimes been apparently favored by bad sanitary conditions.

Though the disease is clearly distinct from diphtheria, in so far as regards the exudation at least, it yet seems to be closely allied to it,—another species of the same genus.

**Langrau:** Meningitis and Compulsory Education. (*The Lancet*, April 26, 1890.)

The author gives a brief account of three cases of meningitis occurring in children aged ten, eleven, and twelve years respectively.

They corroborate the generally-acknowledged facts,—first, that the diagnosis of meningitis in the early stage is usually difficult; and, secondly, that the symptoms presented throughout the disease vary considerably.



In the first there was entire absence of both vomiting and convulsions.

In two particulars they are agreed,—a well-marked *tâche cérébrale* and the peculiar sighing respiration.

The duration of life was six weeks in one case and in another only six days.

All three patients were actively preparing for the school-board examinations, and attended different schools.

Further, each of them, during delirium, spoke of school tasks, teachers, etc., from which (in the absence of any other assignable cause) I conclude that educational pressure was in these instances the exciting cause, and I have little doubt that the present compulsory educational system is not only highly injurious, but productive of many cases such as I have recorded.

**Delepine: Cardiac Calculus.** (*The Lancet*, January 11, 1890.)

The specimen of cardiolith was obtained from a female child who was taken ill seven days before death with diphtheria. She apparently died of cardiac failure.

On opening the heart a hard concretion was found in the right ventricle. It was situated between the right segment of the tricuspid valve and the inner aspect of the part of the cardiac wall forming the right border of the organ.

In shape it was irregularly rhombic. Its three diameters were three-quarters of an inch, one-half inch, and one-quarter inch.

The surface in contact with the valve was slightly nodulated; the outer surface smooth, except at four places near the posterior end of the stone, where it was adherent to the endocardium through four short fibrous-looking bands.

The mass was of a yellowish-white color, felt hard but elastic in some places. On microscopical and chemical examination it was found that the concretion was composed of four concentric strata. It was evident that the concretion was nothing else than a cardiac thrombus or polypus partly calcified.

There was slight thickening of the valve lying over the concretion and of the endocardium with which it came in contact, and there was an unusual number of muscular and fibrous trabeculæ in the cavity of the right ventricle. The concretion was of interest in various ways.

1. From the position of the stone it was evident that it could not have given rise to much trouble during life. 2. From its structure there could be little doubt that it had been growing

slowly by accretion for years, and it was quite possible that it might have begun to form during fetal life. 3. The trabeculated state of the right ventricle was an indication of some slight developmental defect, and reminded one of the spongy structure of the organ during embryonic life; such a state would of course be favorable to thrombi. 4. The deposition of endothelial layers on the surface of the thrombus gave support to the view that organization of thrombi was due to endothelial proliferation. In this case, however, owing to the absence of the necessary elements for vascularization, the deep layers, as they became separated from the nutrient fluid by more superficial layers, successively degenerated and became calcified.

**Sansom, A. E.: Mitral Stenosis in Children.** (*The Lancet*, December 28, 1889.)

This paper on the Pathological Anatomy and Mode of Development of Mitral Stenosis was founded on forty cases clinically observed and nineteen post-mortem examinations, all in children under twelve years of age.

Mitral stenosis in its least pronounced degree was evidenced by a ring of granulations around the mitral orifice on its auricular aspect. The subjacent structures were firmer than normal and formed a thickened ring.

In more pronounced stenosis the mitral curtains were fused to form a funnel, the ventricular aperture of which might be of varying degrees of patency to the dimensions of a crow's quill.

In the child, the funnel mitral was to the buttonhole in the proportion of one to eight, while the buttonhole form was the most frequently observed form in adults. The left auricle was often greatly hypertrophied or dilated. The left ventricle was usually of normal or subnormal dimensions. The right chambers were almost invariably dilated.

Mitral stenosis was not a congenital malformation. It might be considered invariably the result of endocarditis. In every case examined post mortem there was an association with endocarditis, pericarditis, or both these affections combined. In regard to etiology, the cases showed a very strong association with rheumatism.

In the more severe forms of rheumatism mitral insufficiency was a far more frequent result than mitral stenosis, while in the slighter forms the proportion of the latter to the former greatly increased.

The author considered that mitral stenosis was the result of a limited and slow endocarditis, while mitral insufficiency was

due to the retraction of the mitral curtains, the result of a more widely-spread and more intense inflammation. A probable initiatory cause was fright. In such cases a temporary arrest of the heart's action was followed by violent palpitation, and in the disturbed condition of blood-pressure violence might be done to the delicate valve structures of the child. So a limited endocarditis might be initiated at the valve edge, the first lesion, perhaps, being minute hemorrhages such as have been experimentally produced in animals by increasing the blood-pressure in the aorta. The question of prognosis is a difficult one.

Taking the ages at death of the published cases, the average was a shorter one than that of regurgitation. Mitral stenosis developed in children may disappear later in life.

Wiley, C. Henry: *Albuminuria after Scarlatina.* From a Lecture on the Sympathetic Nervous System in Acute Disease. (*The Lancet*, December 28, 1889.)

On comparing notes taken from twenty-seven cases, the first thing noticed was the variety of circumstances under which albumen made its appearance. They differ so much that the author believes that many cases are not accompanied by true Bright's disease.

Classifying them according to the mode of commencement and the daily variation, the cases fall into three main groups. The first group own nervous and vascular causes; the second group, causes even of a more general character, for they are accompanied either by a general collapse during the process of dying, or occurring in some curious relation to other phenomena which are also probably due to vaso-motor changes; the third group are undoubtedly cases of inflammation of the kidney.

It is important to note, as distinguishing group first from the other groups, that the albumen commenced, as a rule, in large quantity, but that it had no sooner appeared than it forthwith began to diminish. These cases (roughly three-fourths of the total) all recovered.

The second group contains four cases. The most significant circumstance which suggests for this group a class of its own is the relation which the albuminuria bears to the general bodily condition. There seems not the slightest doubt that the appearance of albumen depends upon general nervous and vascular conditions, and not upon nephritis. This group contains two fatal cases. The quantity of albumen was small. Fever, diarrhoea, and delirium were well marked. Does any one suppose that these were cases of Bright's disease?



In group three, in which it occurs in connection with acute nephritis, the albumen commences as a trace and steadily increases.

This classification is based on clinical difference.

There is still other evidence that the influence of the nervous system in the majority of cases is of the first importance. The amount of albumen was always increased by any influence tending to lower the tone of the nervous system. The portion of the nervous system whose disturbance so materially contributes to the passage of albumen, and which is so readily influenced by passing systemic disturbances, is in all probability the vaso-motor system.

These distinctions are useful in two respects,—prognosis and treatment.

A favorable prognosis can be given if the case belongs to group one. A proper classification is of the greatest value in treatment, especially in regard to dieting.

The assumption that all cases are Bright's disease unfortunately leads to treatment by skimmed milk and starvation. The contrary method does most good in the favorable cases.

**Aufrecht: Hemiplegia in Children in Connection with Pneumonia of the Apices.** (*Rev. Mens. des Mal. de l'Inf.*, May, 1890.)

Two cases of pneumonia of the apex were observed, in the course of which there was an attack of hemiplegia. The first was in a boy fifteen months old, in whom the pneumonic process invaded the upper lobe of the right lung. On the eighth day of the disease there was a right hemiplegia, which disappeared fifteen days later. The second case was in a girl two years and three months old, in whom the pneumonia was at the left apex. The disease began with severe convulsions, which were followed by hemiparesis of the entire left side. The symptoms of paralysis disappeared within a few hours. Pneumonic hemiplegia has been observed by Lépine, but almost exclusively among the aged, being probably due to an atheromatous condition of the vessels. In such cases the paralysis is consecutive to ischæmia of the central nervous system. Predisposing conditions to the ischæmia are, on the one hand, atheroma of the cerebral vessels, and, on the other, a reflex action which has its point of departure in the lung invaded by the pneumonia. Stephan objects to the foregoing explanation, having observed pneumonic hemiplegia in adults whose vessels were not atheromatous. In his opinion, if there is no anatomical change in the brain and meninges, the hemiplegic pneumonia, in the form of uræmic paralysis, develops

under the influence of a toxic substance, which, joined to the reflex action proceeding from the diseased lung, causes ischæmia of the nerve-centres by acting upon the vaso-motor nerves. With children the author thinks that pneumonic hemiplegia is due to œdema of the brain and meninges. A. F. C.

**Henoch: Concerning Diphtheria.** (*Rev. Mens. des Mal. de l'Enf.*, February, 1890.)

Of one hundred and ninety-two cases of diphtheria seen by the author in 1886-87, one hundred and ten were localized in the pharynx, eighty-two were complicated with croup. Among the latter, seventy were operated upon, all the others dying with evidences of septic infection. Of the seventy who were operated upon, only nine recovered. The cause of the high mortality was partly the great poverty of the population from which these patients came (the cases being all observed at the Charité, in Berlin), and partly the exclusion from the list of every case of non-diphtheritic croup.

A second table, containing thirty-six cases of idiopathic croup in which operations were performed, showed twenty-four recoveries, or sixty per cent. Of one hundred and ten cases of angina without croup, only thirty-two were fatal. Henoch considers that nephritis is a rare complication of diphtheria; that it may appear from the third to the fifth day; that there are deceptive cases in which, after having disappeared, the albuminuria reappears. The author made use of applications of acetic acid in ten-per-cent. solutions. A. F. C.

**Melichar: Impetigo Contagiosa Complicating Vaccination.** (*Rev. Mens. des Mal. de l'Enf.*, February, 1890.)

In a series of vaccinations made in Bohemia, in June, 1889, upon thirty children, and beginning with a healthy child who was vaccinated with animal virus, it was observed that in some cases the pustules ruptured, then were covered with a yellow crust, and that the neighboring skin for a considerable extent was swollen and inflamed. In other cases one or two pustules developed normally, while the others became covered with a large crust, which, when removed, revealed a granular, ulcerating surface covered with a grayish pus. On the seventh or eighth day after vaccination a vesicular eruption appeared which quickly became general. The inoculation pustules were contagious, for the brothers or sisters or mothers of the vaccinated children had them on portions of the body which were exposed. The disease was not syphilis, for it was quickly recovered from; besides, the original case occurred in a healthy child. The conclusion was that the disease was impetigo

contagiosa, the cause, according to Voigt, being *trichophyton tonsurans*, which is very common in young calves. A. F. C.

Hutinel: An Epidemic of Infectious Erythema in the Course of Typhoid Fever. (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

In severe cases of the disease erythema is not a manifestation of secondary infection which is without gravity. On the contrary, it is a complication which may result fatally in a few hours, though there may have been nothing in the symptoms of the primary disease (typhoid fever) to forecast such a result. The greater number of these cases of severe erythema have been observed in the course of the fever itself, all of them in the third week except one, which appeared at the end of the first week, while the benign cases of erythema were observed at the terminal period of the fever, or even during convalescence.

Their appearance in the course of the fever always modified the classical picture which one is accustomed to see. Erythema under these circumstances is to be regarded as a grave toxæmia. A few days before its appearance there may be aphthæ upon the tongue or lips, or a fissure upon the lower lip, or in other cases an intestinal hemorrhage, or a very copious diarrhœa. Then the weakness and prostration suddenly increase, with other serious phenomena. Among the latter may be mentioned uncontrollable vomiting of a greenish matter mixed with mucus, fetid stools of a greenish or grayish color, a characteristic appearance of the face, an eruption which in benign cases appears upon the back of the hands, the knees, the legs, and thighs, and in grave cases it is complicated with vesico-pustules surrounded with a red nimbus, which is again surrounded with a bright red circle. The temperature, which may be 40° C. or more, descends to 37°, or even lower, within a few hours, and on the last day it ascends again to 40°, or even higher. The pulse is slow and feeble at first and then becomes accelerated. The respiration is accelerated also towards the end. The urine is scanty and contains much albumen. There is no true collapse nor coma, but prostration and adynamia. In one case there were two relapses with recovery, then a third relapse and death. The average duration of the attack is two and a half days. The prognosis of an erythema which is preceded by vomiting, with alteration in the features, great falling of the temperature, and slowing of the pulse, is usually fatal. On the other hand, it is relatively benign, though serious, in the absence of these phenomena, recovery being very slow. The diagnosis is to be made differentially from



measles by the absence of symptoms connected with the mucous membrane,—namely, conjunctivitis, coryza, bronchitis,—by the location of the eruption, and the course of the temperature. It is hardly possible to confuse the disease with scarlatina. The autopsies which have been made dispel any doubt as to the actual existence of typhoid fever, the characteristic lesions of the latter disease having been found, in all cases, in a form which was suitable to patients in an early period of life. On the other hand, there were no typhoid fever lesions which could be considered as fatal ones, the conclusion being therefore a necessity that the result was due to the erythema.

It was impossible to explain the intoxication in the given cases as the result of the medicaments employed, or as the result of the absorption of gastric or intestinal poisons, or as due to cutaneous bacterial discharges which Bouchard has referred to as a possibility in typhoid fever. The author believes that there was in these cases a secondary infection, although he was unable to find the microbe of this infection in the blood or in the skin. It seemed to him possible that the entry might have been effected through the aphthous ulcerations of the lips or the tongue which preceded the appearance of the erythema.

A. F. C.

**Klein: Atrophy, Hypertrophy, and Deviation of the Nasal Septum.** (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

In the examination of six hundred cases the author found only two per cent. in which the septum was straight. The most frequent changes were atrophy, hypertrophy, and deviation of the septum. In most cases the changes were due to falls or blows upon the nose during childhood, troubles in respiration or even conjunctivitis appearing as consequences at a later period. Hypertrophy was usually found in the bony portion, and atrophy in the cartilaginous portion of the septum. The former is frequently caused by traumatisms, just as a blow upon the tibial or femoral diaphysis causes subsequent osteo-periostitis and hypertrophy. Atrophy is much less common on account of the suppleness of the cartilage in young children, and its greater liability of avoiding blows. The author has devised a nasal speculum which can readily be placed in position and held by the patient. He has also devised a septometer for measuring the thickness of the septum. The deviation may involve the osseous or cartilaginous portion or both, and may present a great variety of forms. The treatment may be limited to two methods of procedure. If the deviation is in the bony portion or in the thick portion of

the cartilage, it should be divided. If it is only in the cartilage, it may be treated by the use of tampons of ivory, ebony, or vulcanized rubber. If the deviation is tortuous, both nares should be tamponed, and flat silver tubes may be used for such a purpose. Atrophy without deviation requires no particular treatment. The treatment of hypertrophy should be regulated by its extent and the permeability of the nasal ducts. It should be limited to palliative measures if respiration is unimpeded. If respiration is interfered with, the cartilage should be divided to the bone with a bistoury or the thermo-cautery. If it is necessary to attack the bony portion, the author prefers a bone forceps to the nasal saw. By this means he has treated thirty-two cases, and has avoided the destruction of the mucous membrane and the formation of a troublesome scar.

A. F. C.

**Kassowitz:** *The Nature and Treatment of Rachitis.* (*Rev. Mens. des Mol. de l'Enf.*, March, 1890.)

The author takes issue with that common opinion that rachitis is due to a diminution in the supply of calcareous salts in the food, or to insufficient absorption of these salts on account of a disordered gastro-intestinal function. In his opinion it is not the absence of the lime salts, but the inflammatory hyperæmia of the osteogenetic tissues which plays the principal rôle in the production of rachitis. If his idea is correct the administration of the different salts of lime is useless, since the ordinary food contains them in sufficient quantity. On the other hand, it is irrational to forbid the use of starchy matters, since, when lactation is nearly over, they form the indispensable complement to alimentation with milk, while meat frequently occasions disorders of digestion. The curative action of salt-water baths is insignificant, but sea-baths taken in the sea, and a residence in a high altitude, have a decided influence upon the rachitic process. After Wagner had demonstrated the specific action of phosphorus on the bones of animals during their period of growth, the author conceived the idea of using this substance in the treatment of rachitis. The favorable results, which were first published in 1884, have since been confirmed by many investigators. The author's observations actually include as many as twenty-five thousand cases. The greater number of children in this vast list take phosphorus in conjunction with cod-liver oil, in the proportion of 0.01 to 100. A sufficient dose is a coffeespoonful of oil daily, containing half a milligramme of phosphorus. The phosphorated oil is well tolerated by almost all children, and the treatment can be continued without inconvenience during the

warm weather. If there be any reason for not giving the oil, lipanine may be substituted for it. An emulsion of phosphorus and lipanine may be given in the following prescription :

R Phosphori, 0.01 gramme;  
Lipanine, 30 grammes;  
Sac. alb.,  
Gum arab. pulv., āā, 15 grammes;  
Aq. destil., 40 grammes.  
Sig.—Take a coffeespoonful daily.

A. F. C.

Reimer: The Fever in Scarlatina. (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

Basing his statements upon a large number of thermometric tracings, the author divides scarlatina into the following forms :

	Per cent of Mortality.
1. Simple or uncomplicated scarlatina.	
a. Mild.....	0.0
b. Severe .....	83.76
2. Complicated.	
a. Short, mild.....	2.08
b. Short, severe.....	6.94
c. Long, benign.....	5.66
d. Malignant.....	39.34
e. Prolonged, benign.....	26.47
Malignant.....	79.99
3. Scarlatina following other diseases.....	81.96
4. Scarlatina followed by other diseases.....	44.32

In the treatment of three thousand four hundred and sixty cases of the disease, nine hundred and seventy-eight were subjected to hydrotherapy, which was used with the idea of reducing the temperature in the following forms :

1. Cold compresses.
2. Cold envelopment.
3. Cold with dry friction.
4. Cold with affusions of water in the empty tub.
5. Cold with affusions in a half-bath progressively cooled.
6. Short or long tepid baths.
7. Full baths gradually cooled.
8. Cold half and full baths with friction.

Cold compresses upon the head, thorax, and abdomen were frequently used, except in cases in which the restlessness of the patient was so great as to make its use too difficult. Their action was favorable upon the heart, but they did not lower the temperature to any great extent. Cold envelopment was used, especially in nervous, anæmic, or rachitic children. There was a favorable action upon the heart, but hardly any



effect upon the temperature. Cold envelopment combined with dry friction was used in cases in which it was desired to produce cutaneous revulsion and excite the nervous system. Under their influence the respiratory movements became more regular, but the temperature showed no change. Cold envelopment combined with affusions of water in the empty tub, the temperature of the water being  $12^{\circ}$  to  $14^{\circ}$  C., were tried in cases of cyanosis, stupor, and collapse. This treatment, used with all proper precautions, generally gave good results, but there was no effect on the temperature. Results quite as favorable were obtained with cold envelopment followed by affusions in a gradually-cooled bath. In some of these cases the phenomena of collapse were notably aggravated, hence this method calls for unusual precaution in its use. The effect of prolonged tepid baths was bad. The temperature was uninfluenced and a general weakness resulted, which in some cases was of a threatening character. The same was true in all cases in which a gradually-cooled bath was used. Such baths have a sedative effect in typhoid fever, but in scarlatina their effect is pernicious. The efficiency of full cold baths in scarlatina was undoubted if they were used methodically and with proper precautions. The patient is plunged into a tub half filled with water at a temperature of  $12^{\circ}$  to  $14^{\circ}$  C. After removing him from the water he must be rubbed briskly and then wrapped in a woollen blanket. In such cases the temperature will frequently drop  $2^{\circ}$  C. The patients seem much relieved by such bathing, and will desire its repetition. It is impossible to give general rules for the use of hydrotherapy in scarlatina, the indications will vary with the progress of the disease. With regard to the treatment of the disease by the use of antithermic remedies internally, the author did not obtain favorable results with quinine, sulphate of soda, kairine, thallin, etc. On the other hand, the antithermic action of antipyrin never failed, but its use should be attended with the greatest care on account of the danger of collapse.

A. F. C.

**Couder:** Pathogeny of Certain Cases of Multiple Abscesses in Nursing Children. (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

Bouchut was the first to make a study of this form of disease, and has divided it into three categories according to its origin, attributing it, first, to the puerperal state; second, to syphilis; third, to scrofula. Syphilitic abscesses are to be regarded as merely softened gummata, and scrofulous abscesses are usually of tuberculous origin. The author cannot accept

Bouchut's implied statement that all other cases are attributable to the puerperal state, and considers that a fourth class should include multiple abscesses of unknown origin. In this class may be included cases in which the mothers of the patients suffer from inflammation of the milk-ducts, pus being withdrawn by the baby in the act of nursing. Such cases may be considered instances of benign purulent infection, and a number of this character are narrated. Such a condition is an indication for withholding the breast from the child, as also is the existence of any contagious acute general disease. The breasts and nipples of the mother should be treated antiseptically, and also the umbilicus of the infant. It is concluded that the general infection in these cases may have two principal ways of entrance: first, the inflamed and septic umbilical wound; second, the digestive tract when the milk of the mother contains pathogenic organisms. A. F. C.

Von Dusch: *Purpura.* (*Rev. Mens. des Mal. de l'Enf.*, May, 1890.)

The author agrees with Henoeh in regarding purpura as a distinct disease. He has seen about thirty cases of this disease in children, almost all of whom were two or three years of age, in bad hygienic surroundings and badly nourished. In most cases medical aid was required on account of profuse nose-bleed, which required tamponing of the nasal cavities. The ecchymoses were well marked from the beginning, and were usually disseminated over the entire body, with the exception of the face and hands. Purpuric spots were frequently observed upon the bucco-pharyngeal mucous membrane. The disease usually lasted one to three weeks, and always resulted in cure. Rheumatic purpura occurs in successive attacks, which are separated by remissions, during which the patient may appear perfectly well. In such cases the spots appear upon the extremities, especially the lower ones. The disease may last several weeks or even several months. There may be three varieties: first, purpura with joint affections, some of the joints being painful or swollen, sometimes with circumarticular œdema; second, purpura accompanied with violent intestinal disorder in the form of colic, bloody vomiting, intestinal hemorrhage, and no articular phenomena; third, purpura with intestinal trouble and articular lesions. Such cases may terminate fatally. Purpura hæmorrhagica signifies a change or changes in the blood, while rheumatic purpura is due to different embolic processes.

A. F. C.

## III.—SURGERY.

**Eve, Frederick: Spontaneous Dislocation of Patella.** (*The Lancet*, November 23, 1889.)

The child was six years old. One year ago the mother had noticed that "the bone of the knee came out." The child had a fall three years ago, after which she ran about, but did not complain of pain.

When the joint was flexed at a right angle, the patella would slip easily into a position below and to the outer side of the external condyle of the femur. The capsule was lax; the vasti atrophied. There was no evidence of rickets. No genu valga. The hip-joints were natural. The patella could be kept in position by the thumb when the knee was flexed.

The dislocation appeared to be due to the lax condition of the ligaments on the inner side of the joint rather than to any alteration in the articular surfaces of the bone.

*Remarks.*—The displacement outward is naturally favored by the normal obliquity of the femur to the inner side of the axis of the limb.

Three forms of dislocation have been described and are commented upon in the article.

Operation was refused, so that an attempt to remedy the malposition by shortening the capsule on the inner side could not be considered.

A pelvic band with leg irons, allowing only limited movement at the knee, was given to the child, and a horseshoe pad was attached to outer iron in such a manner as to press on the outer side of the patella, and so retain it in position.

It was found impossible with any apparatus to maintain the patella in position when the knee was strongly flexed.

**Battle, Wm. H.: Excision of both Hip-Joints with Recovery.** (*The Lancet*, October 12, 1889.)

The patient, aged fourteen years, had always been a delicate boy, but had suffered from no serious illness. There was no history of injury. There was a family history of consumption. The disease began suddenly in one hip and soon pain and swelling appeared in the other.

When he came under treatment neither limb could be straightened; there were bedsores over all the bony prominences. He suffered from sweating and diarrhœa. Temperature was 104°. The urine contained one-fourth albumen.

A few days later an incision was made on the outer side of the left hip. Several ounces of pus were evacuated, and the



finger, introduced, felt the head of the bone lying on the dorsum ilii. The head of the bone and a portion of the ilium was bare, but there was nowhere granulation growth.

The head of the bone was removed; but the sawn surfaces could not be made to descend lower than the upper margin of the acetabulum.

The wound was antiseptically dressed and a long outside splint with extension put on.

There was much improvement after this operation.

Three days later the right hip was incised, and at the bottom of the wound the separated epiphyseal of the femur was found and removed. There was but little granulation growth.

Two weeks later he was greatly improved in every respect. In five weeks the left hip was healed, and in seven the right was healed. During the succeeding seven months he continued to improve in general health. Then he suffered from an attack of cutaneous erysipelas, which involved in succession nearly all parts of the body.

From this he recovered in five weeks.

*Remarks.*—Double hip-joint disease is a rare affection. The trouble is generally chronic, but in this case was acute and rapidly ran on to disorganization of the joint. One and one-half years from the beginning of treatment the boy was able to walk rapidly without the aid of apparatus which he had worn up to that time. The patient has grown, his muscular development below the knees being markedly increased. The left limb is an inch shorter than the right.

Clarke: Congenital Club-Foot and Spina Bifida. (*The Lancet*, December 21, 1889.)

The body of a female child which died a few hours after birth was shown at a meeting of the Harveian Society. Hydrocephalus, spina bifida, and double talipes were present. The spina bifida was a myelocoele. When the head was pressed there was a flow of liquid from the opening of the central canal.

At birth, both hips and knees were fully flexed. The feet were crossed and fixed by four turns of the umbilical cord. The feet showed equino-varus.

Dissection showed that the anterior ligament of the hip and the posterior ligament of the knee were shortened and prevented extension.

The ligaments on the inner side of the foot were similarly shortened.

The deformity appeared to be fully accounted for by the mechanical conditions.

Eve, Frederick: A Vascular Tumor of Meatus Urinarius. (*The Lancet*, November 23, 1889.)

The patient was a delicate girl, aged six years. There was pain in passing urine, and some discharge from the vulva. There was a vascular tumor surrounding the urinary meatus and projecting from it about a quarter of an inch; its circumference was about the size of that of a hazel-nut. It was very painful when examined.

Electrolysis was tried without affecting the size of the tumor. A week later it was removed completely with scissors, the hemorrhage not being excessive.

When seen last (about one month later) the child was quite free from stricture or recurrence.

Notices of similar cases at such an early age are very rare.

Grun: Death through Impaction of a Pea in the Bronchus. (*Lancet*, December 14, 1889.)

A child, playing with some peas, placed three in her mouth. A fit of coughing occurred, and one pea was missed. Air entered freely into both lungs and there was no dyspnoea.

For four weeks the child continued in fair health, but died suddenly.

At post-mortem, a pea was found in the trachea; it had evidently been impacted in left bronchus.

The lung was solid and fibrous.

There was considerable emphysema at the apex and many pleuritic adhesions at the base. The right lung was perfectly healthy.

It is interesting to note that the result of impaction and occlusion of the bronchus was to produce emphysema and pleuritic adhesion, but no inflammation or actual destruction of lung tissue.

Death was probably caused by the pea becoming dislodged and occluding the right bronchus, thus producing instant suffocation.

Marshall: Cases of Litholapaxy in Children. (*The Lancet*, December 14, 1889.)

Eight cases are reported, occurring between the ages of two and a half and ten years. A brief history of each case is given.

Some of the operations were ultimately completed by lateral lithotomy because of the extreme difficulty in obtaining lithotrites.

All the cases recovered perfectly.

The stones were, for the most part, large; some very hard. They were completely removed.

Anæsthesia was employed. The operations lasted about half an hour. Several of the cases became collapsed towards the completion of the operation.

These cases emphasize the rule laid down by those who have had much experience in this operation in children, that it is essential that the surgeon be well supplied with lithotrites.

**Buckley: Rickets with Unusual Deformity of the Humerus.** (*The Lancet*, December 7, 1889.)

The patient was seven and a half years old. In addition to the customary deformities, there was a remarkable bilateral flattening of the upper two-thirds of the shaft of each humerus, the anterior bicipital ridge projecting almost like the edge of a knife beneath the skin.

The affected portions were also curved forward.

The symptoms of rickets had apparently not shown themselves until after the first dentition.

It was suggested that the flattening and bending was possibly due to the arms being grasped at that part while the bones were in a softened state.

**D'Heilly: Tubage of the Larynx in Croup.** (*Jahrb. f. Kinderh.* xxx. 1 and 2.)

In 1858, Bouchut read a paper before the Academy of Medicine in Paris in which he recommended the tubage of the larynx. His recommendation was not approved, the opposition being led by Trousseau. In 1880 the method of Bouchut was taken up anew by O'Dwyer, of New York, and since 1885 it has been in general use in America, so that at the Congress at Washington, in 1887, statistics of two thousand five hundred and nineteen cases could be presented, showing better results as to mortality than the statistics of tracheotomy. The author reports thirteen cases in his paper for conditions for which tracheotomy is usually required, namely, persistent dyspnoea, recession of the epigastrium, and commencing asphyxia. The youngest child was nineteen months old and the oldest four years. Two of the children were too near death to be benefited by tubage or any other procedure. Of the other eleven only two were saved. In spite of the great mortality, the author was able to form a favorable opinion as to the value of the method. It involves no loss of blood and no wound, can be carried out easily, and serious and not-to-be-foreseen accidents are not likely to occur. These are advantages in comparison with tracheotomy in which one is never secure from painful surprises. An unsuccessful tubage can be repeated, and if continually unsuccessful, tracheotomy can be performed.



The intubation canula is usually well borne, and injuries to the larynx need not occur if proper care is used. If the tube fits well there is an immediate change of scene in the patient, the recession of the thoracic wall ceases, the respiration becomes quiet, the child is restful and falls asleep. Neither shock nor rise of temperature attends the operation, and cold air is not inspired, as is the case when inspiration is through a tracheotomy canula. On the other hand, the tube is frequently obstructed by false membrane, when it must be quickly removed and then quickly introduced again. Such attention is quite available in a hospital, but not in general practice. American authors recommend that the patient be allowed to cough the tube out and with it the membrane which is adherent. Nothing of this kind was ever seen in the author's cases. Another objection to tubage is the great difficulty in swallowing which it includes, and, of necessity, the interference with nutrition. Especially is difficulty experienced in the administration of fluid food, which may produce lung disease by aspiration into the lungs. Feeding through the nose by means of a catheter may obviate this difficulty, but it also presents others. It is unnecessary that the tube should drop into the oesophagus, for the string which is attached to it and which passes out of the mouth should prevent such an accident. The method may be used under the following conditions:

1. In very young children in whom tracheotomy offers only slight chances of recovery, and in whom even a slight loss of blood would be harmful.
2. In mild cases of croup which appear to be likely to continue as such and for which tracheotomy is a severe remedy.
3. In very severe cases of toxic diphtheria, in which the patient is already weakened to such a degree that he might not be able to endure tracheotomy and its consequences.
4. In cases of secondary croup following measles, in which tracheotomy is never successful. Tubage in such cases offers a slight chance of success.
5. In all cases in which tracheotomy is impossible or dangerous.

A. F. C.

**Ganghafner :** The Treatment of Croupous Diphtheritic Laryngeal Stenosis by means of the O'Dwyer Intubation Operation. (*Jahrb. f. Kinderh.*, xxx. 3.)

Thiersch and Rehn were the first in Germany to give this operation extended trial. The experience of the former led him to say that it could not be recommended as an operation which was generally and primarily useful, but he also expressed the hope that it might lead to one which would serve

as a successful substitute for tracheotomy in severe cases of diphtheria. To attain such an end very extensive statistics are necessary. Dillon Brown's table, published in March, 1889, showed a percentage recovery of 27.3 in two thousand three hundred and sixty-eight cases. Such figures warrant the experiments which have been made with the operation in Germany, France, England, and Spain. Statistics of European operations have been published by Graser, Ranke, and Guyer, and to these the author adds forty-two cases of his own. The difficulty of extracting the tube and the danger of its becoming clogged, which was early recognized by American physicians, have proven equally troublesome in Europe. This led the author, in his earlier operations, to retain the string which passed through the head of the tube and out of the child's mouth, fixing it near the ear with adhesive plaster and a head-bandage. Such a plan might necessitate the securing of the child's hands that he might not interfere with the string. There was seldom any trouble in the introduction of the tubes, though in four cases impending asphyxia from oedema or from forcing down the membrane caused a necessity for hasty tracheotomy. Such accidents, especially the latter, are believed to be more likely to occur in children under two and a half years of age than in older ones, in whom the tracheal opening is more voluminous. Decubitus, leading to the exposure of the cartilages, was observed in four cases, and this accident is believed to be more likely to happen in cases which are complicated with measles or scarlet fever. This condition is analogous to the canula decubitus with erosion, which sometimes occurs after tracheotomy. It may be avoided, at least in a measure, by removing the tube, perhaps temporarily, after it has been in position from twenty-four to thirty hours. In twenty-one of the author's forty-two cases tracheotomy was required subsequently to the intubation. In many of the author's cases, it appeared to him that the lumen of the tube was too small to admit of efficient ventilation of the lungs. In several of the cases, portions of membrane were expelled through the tube by coughing. The after-treatment of intubated children called for about the same care and attention as in tracheotomy. The nutrition of the intubated children was best affected by means of a catheter introduced into the stomach. In none of the fatal cases was there any evidence of the presence of Schluck pneumonia. It was not found that there was any particular advantage in the artificial epiglottis adjustment devised by Waxham. The youngest child of the forty-two which were intubated was nine months old, the oldest eleven years. Only eight of the

forty-two recovered. During the same period forty-five cases of diphtheria were treated by primary tracheotomy, and of these, four recovered. Thus, it will be seen that the epidemic was an unusually severe one. Of those who were tracheotomized, the youngest was eleven months old, the oldest eight years. Of Guyer's twenty-seven cases of intubation, thirteen recovered, and of Ranke's forty-four cases, ten recovered. The author concludes that in the treatment of croupous diphtheritic laryngeal stenosis intubation shows very fair comparison, as to results, with tracheotomy, and a further test as to its usefulness is justified by the results which have already been attained. The diphtheria wards in hospitals are especially suitable for the carrying out of such a test.

A. F. C.

**Ranke: Intubation and Tracheotomy in Croup.** (*Jahrb. f. Kinderh.*, xxx. 3.)

The author's conclusions are expressed in the following propositions:

1. The O'Dwyer operation for intubation is to be regarded as a method of treatment which has been successful in many cases of diphtheritic laryngeal stenosis, and consequently represents a decided advance in therapeutics.

2. But intubation will never be able to entirely displace tracheotomy.

3. These two methods of operation are not to be compared as having rival relations with each other, but as having complimentary relations. Therefore, it will sometimes be necessary to use one of these operations singly, sometimes to combine it with the other, and many lives will be saved thereby.

4. As a rule, which admits of numerous exceptions, treatment should be begun with intubation, and tracheotomy should follow when the former is not successful.

5. The best results in the treatment of croup may be attained in well-regulated hospitals, in which also the children of the better classes may be treated in private rooms by experienced nurses, with constant medical supervision.

A. F. C.

**Van Arsdale: On Subluxation of the Head of the Radius in Children.** (*Annals Surg.*, 1889, ix. 401.)

He reports one hundred cases, and draws the following conclusions:

1. The injury frequently occurring in childhood and called subluxation of the head, or displacement by elongation of the radius, is a well-defined, typical injury, with well-marked,



constant symptoms, and due to the same anatomical lesion in each case.

2. The frequency is over one per cent. of surgical injuries in children.

3. It occurs in children under nine years of age.

4. The most frequent exciting cause is sudden traction by the hand or forearm; more rarely a fall.

5. The principal symptoms of the injury are absence of appreciable deformity; loss of function of the arm; localized pain over the head of the radius on pressure; pronation of the hand; slight flexion of the elbow; crepitation or snapping upon forced supination with restoration of function.

6. Treatment with a splint is advisable in order to prevent recurrence.

7. The anatomical lesion causing the injury is not yet satisfactorily established.

Kammerer, F.: Intussusception in a Child of Six Months: Laparotomy—Evisceration—Recovery. (*Med. Rec.*, New York, 1890, xxxvii. 113.)

The points brought out by this case seem to be:

In cases of acute intestinal obstruction in very young children (mostly intussusception), where reduction by enemata or insufflation has failed, laparotomy ought to be immediately resorted to.

It is to be remembered, in this connection, that at the end of the third day the intussusception may still be reducible after laparotomy, and that prolonged attempts ought always to be made before reduction is considered impossible.

In very young children, taking into consideration the smallness of the field of operation, the absence of meteorism, facilitating the replacement of the intestines, the probability of being able to find the obstruction in less time, and the fact that two cases have been successful in children only six months old, it seems the better plan to make a large incision accompanied by evisceration.

After the obstruction has been found, the intestines should be immediately returned to the abdominal cavity before further manipulations are undertaken. This will be the surest way of preventing shock or intestinal paralysis.

Chambers, J. P.: A Case of Sarcoma of the Breast in a Child of Four Months. (*Univers. Med. Mag.*, Philadelphia, 1890, ii. 376.)

The patient was a hearty, well-developed, female child. At four months of age it had a tumor of the right breast

about the size of a small hen's egg, which the mother said had first been noticed when the child was about five weeks old. The tumor was painless, the skin slightly darker than the natural color, there was no involvement of the lymphatic glands, family history negative, and no cause for its appearance could be given except the possibility of the father having pinched the breast in picking up the child. It was removed, and upon microscopical examination the tumor proved to be a sarcoma of the small, round-celled variety, plentifully supplied with blood-vessels.

**McKenzie, B. E.:** *Treatment of Hip-Disease.* (*Canadian Pract.*, Toronto, 1890, xv. 173.)

The practice advocated in this paper may be briefly summed up:

1. Constitutional treatment, such as is employed in other wasting diseases, is of prime importance in all cases.

2. In early stages of the disease treatment by rest for the joint is indicated.

3. Rest can be better obtained by employing a portable fixation apparatus than by any means requiring confinement in bed.

4. Deformity, if not fixed by adhesions or contracted muscles, may be corrected by the use of portable splints.

5. Deformity, maintained by contracted muscles and adhesions about the joint, may frequently be corrected by myotomy or tenotomy, and the adhesions broken up by using a moderate degree of force.

6. When deformity cannot be so corrected, osteotomy should be performed.

7. If faithful trial of these means fail to give satisfactory results, excision or amputation should be performed.

8. Pus, or sequestra, when known to be present, should be removed by operation.

**Waxham:** *Report on Intubation of the Larynx.* (*Journ. Am. Med. Assoc.*, 1889, xiii. 882.)

He reports two hundred and ten cases, with sixty-nine recoveries, or 32.85 per cent.

**Manley, T. H.:** *The Early Operation for Harelip.* (*N. Y. Med. Journ.*, 1890, li. 403.)

He reports two cases, and advocates that the operation should be done at the very earliest possible time. The first case was operated on just four days after birth, and the second case six days. Both operations were successful.

Custer, D. D.: Gonorrhœa at Five Years of Age. (*Med. and Surg. Rep.*, Philadelphia, 1889, lxi. 428.)

The penis was very much swollen and there was an intense gonorrhœal discharge, with a history of chordee and painful erections at night. The boy was sleeping with his sister, eighteen years old, who had leucorrhœa. In two weeks the aggravating symptoms subsided and the discharge ceased.

Kirmisson: Painful Flat-Foot (Valgus) and the Different Methods of Osteotomy which are applicable for its Cure. (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

Three theories have been advanced as to the origin of this condition:

1. Duchenne's muscular theory, involving the functional impotence of the lateral peroneus longus.

2. Gosselin's theory that the disease is the result of primary lesions in the articular cartilages.

3. Le Fort and Tillaux's theory, that it is due to relaxation of the ligaments.

Still another theory has been advanced, by Whitmann, that the lesions and deformities are the consequence of the overloading and overriding of the plantar vault.

In the author's opinion the most important element is the turning of the foot outward, from which follow traction on the ligaments, pain, and functional impotence. The proof of this theory consists in the fact that when one succeeds in correcting the forced abduction of the foot, the latter while resting on the level ceases to give rise to pain, inasmuch as the weight of the body then rests upon the plantar surface of the foot and not upon its internal border. After having tried complete rest for the member in bed, which may be required after there has occurred a muscular contraction of average intensity, one must have recourse to forced redressment, aided by chloroform and tenotomy of the lateral peroneal muscles, as advised by Barwell. This should be followed by prolonged immobilization of the foot in a plaster bandage. If the results of such treatment should not be permanent, or if extreme muscular retraction or deformity of the articular surfaces do not favor redressment, osteotomy should be practised along the internal border of the foot. The best-known procedures are Bennet's cuneiform excision of the astragalus, Stokes's resection of the astragalus, Vogt's extripation of the astragalus, Ogston's operation upon the astragalo-scaphoid articulation, and Davy's and Golding-Bird's operation upon the scaphoid. The author believes that osteotomy is only exceptionally indicated for this lesion.

A. F. C.



TRANSACTIONS  
OF THE  
AMERICAN PEDIATRIC SOCIETY,  
HELD IN NEW YORK CITY, JUNE 3 AND 4, 1890.

(Continued from page 744.)

THE ETIOLOGY OF EMPYEMA IN CHILDREN.

BY HENRY KOPLIK, M.D.,

New York.

I AM certain that you will all agree with me when I say that the subject of the etiology of empyema in childhood is one of the first importance. This theme and its kindred factors are at the present time subjects of the most sincere and painstaking investigation all over the world. The present communication is only a preliminary one to the more complete paper to be published at some future day. In it the special aim is to inquire into the etiology of empyema in infancy and childhood from the stand-point of modern bacteriology. In infancy and childhood the factors of predisposition and exciting cause are modified in their action by the nature of the material dealt with, a growing, developing organism. This is seen particularly well in the chest, where severe processes are borne with a resistance and impunity not to be expected in the adult. We know that in practice these conditions will vary the prognosis. In the disease empyema, it is the etiology which explains in part why the treatment of the disease is more satisfactory in childhood than in the adult. In studying the disease we must revert constantly to the adult subject, and I confess that when these studies were first begun such reference to the adult was obligatory, for none of the works extant treat of the disease in childhood in a satisfactory manner. I found in the course of my work certain similarities

between the bacteriological results as published in the adult and in childhood tending to uphold in important points the identity in the pathology of the affection as common to the child subject and the adult. A brief *résumé* of the investigations in the field is as follows: The most complete series of observations upon empyemas was published by A. Fraenkel (*Ueber die bakterioscopische Untersuchung eiteriger Ergüsse Charité Annalen*, 1888, p. 14). He had published fragmentary communications upon the same subject at a much earlier day, anticipating Weichselbaum, who, as early as 1886, appeared with a paper (*Wiener Jahrbücher*) confirming the most important views put forth by Fraenkel. Previous to this, the notices in the literature of bacterioscopic work were imperfect, but they gradually led up to the more complete investigations to be detailed. Flesch and Vaillard (*Archives de Physiol. normale et pathol.*, 1886, p. 162), as also Landouzy, doubt the possibility of a genuine sero-fibrinous pleurisy as the result of exposure to cold. According to these authors all pleurisies whose etiology is not evident are the result of an expression of a localized tuberculosis. The exposure to cold only plays a predisposing rôle in the etiology. In sero-fibrinous pleurisies the diagnosis is more difficult because our methods of investigation yield a negative result in most cases. We are thus allowed a mere surmise upon their true character. Ehrlich (*Beiträge zur Ätiol, etc., Pleurit Ergüsse Charité Annalen*, 1882, p. 207) investigated with stainings the bacterial character of fluids obtained from the chest in forty-five cases of pleurisy. Of these, nine cases were tubercular, twenty simple pleurisy, six carcinomatous, and nine empyemas of various kinds. A negative result by cover-glass stain does not exclude tuberculosis. In nine cases the sputa of which showed tubercle bacilli, the bacilli were found in the pleuritic exudate in only two cases. Ehrlich thinks that the bacilli became entrapped in the fibrin masses of the pleuritic exudate, and thus escaped detection in the cover-glass. A. Fraenkel does not reject the possibility of a sero-fibrinous pleurisy as the result of an exposure to cold. In these cases the vital forces are so reduced by cold as to enable micro-organisms situated in the subpleural tissues to become potent. Cold may in this way be an important predis-

posing factor in the causation of pleurisy. In this class of cases, where micro-organisms have not been isolated, a certain percentage have proven, upon autopsy, to be tubercular. The etiology of the remainder is still a matter of speculation. In some sero-fibrinous pleurisies there has been a positive result, immense quantities of streptococci having been found in one case (Fraenkel). In others, where micro-organisms have been present, the exudate became purulent subsequently. Fraenkel makes three principal groups of his cases of empyema. This grouping is based upon the bacteriological results. The first group yielded streptococcus pyogenes upon investigation of the pleuritic exudate. These organisms may have been derived from the lung, a previous pneumonia (Weichselbaum), or there may not have been any preceding pneumonia. Such empyemas may (?) result from a traumatism without perforation of the chest, the trauma acting, as stated above, as a predisposing cause. The second group includes all those empyemas which result from pneumonia, post-pneumonic or concomitant with pneumonia. In all of these cases the diplococcus pneumoniæ (Fraenkel) is found in pure forms in the pleuritic exudate. This micro-organism is not only capable of producing suppuration, but in these cases suppuration is maintained by the closed pleural cavity, the presence of blood-vessels, and a different nutritive medium than in the artificial culture, where these micro-organisms soon lose their virulence; Fraenkel's cases followed or complicated fibrinous pneumonia. The third group is that including the tubercular empyemas. A fourth group of cases includes those empyemas which complicate some extra pleural focus of suppuration, pyæmic cases. The above cases in which the pneumococcus was found followed lobar pneumonia. Inasmuch as in children the processes in the lung, when pneumonia is present, are of a broncho-pneumonic character in most cases below a certain age, it will be necessary here to anticipate by citing the researches of Weichselbaum, who found that the pneumococcus of Fraenkel was also an important etiological factor in broncho-pneumonia, lobular pneumonia (*Ueber die Ätiol der acuten Lungen und Rippenfell Entzündung*). The division of pneumonia into lobar and lobular has an anatomical but not an etiological basis. Both varie-



ties of pneumonia may be caused by the same micro-organism. Weichselbaum also examined cases of pleuritis, and found not only the diplococcus pneumoniae, but also the streptococcus pneumoniae or pyogenes and the staphylococcus pyogenes aureus. I will, in addition, only refer to the recent discourses of Von Ziemssen (*Klin. Vorträge*) and Liebermeister (*Deutsche Medicinische Wochenschrift*, Nos. 10, 11, 12, 13, 1890), as excellent *résumés* of our present knowledge in the pathology and therapy of the pleurisies and empyemas. My own material is made up of cases obtained from my dispensary and private practice, and I have also studied the disease in the wards of the Mount Sinai Hospital, New York. I wish to sincerely thank Dr. Barnim Scharlan, who has charge of the children's wards at this hospital, for the very liberal manner in which he has placed his cases at my disposal; without access to such clinical material the work which I present would be less satisfactory and simply fragmentary. The experimental work which forms the basis of my studies was done in the Carnegie Laboratory of New York. I am indebted to Dr. E. K. Dunham, of this institution, for many professional courtesies. The micro-photographs were prepared from my own preparations, and are the work of Dr. R. H. Cunningham, house physician to the Mount Sinai Hospital. The apparatus used was the most improved Zeiss, and the beauty of the work speaks for itself. I am indebted to the doctor for his patience and enthusiasm.

*Methods of investigation.*—In making the following studies I have adhered closely to the methods now so well known by all the investigators of the Koch school. The chest of the child was first carefully cleansed, a carefully sterilized needle and syringe was then introduced, and a small quantity of pus withdrawn, placed in a sterilized tube, and taken to the laboratory for immediate investigation. A new syringe was used in each case for reasons which will appear evident to all. These hypodermic syringes, after they have been once the receptacle of pus, must be difficult to thoroughly clean, and to do away with this objection I never used a syringe twice, but discarded the old syringes. The new syringe, after having been carefully prepared by washing with sublimate, alcohol, ether, and sterile-distilled water, was attached to needles sterilized by dry heat

in the usual way. The pus was immediately sown upon plates and tubes, and crude cover-glasses were also prepared and stainings made. When pure cultures were obtained from the agar or bouillon in the case of the diplococcus pneumonia, or from agar, gelatin, and bouillon in case of streptococci or staphylococci, they were used for experimental work. Or the pus was, according to Weichselbaum's method, inoculated into agar tubes, and when sufficient growth was attained new tubes and plates were made, the latter to test the purity of cultures. The above was carefully carried out in each case. The media used were blood serum, agar-agar, gelatin, glycerin-agar bouillon, and potato. I found that the most uniform results were obtained with the agar invented by Weichselbaum; it has the requisite consistency and moisture. The pure cultures were suspended in sterile-distilled water and injected into animals, or the pure bouillon culture was injected. Rabbits, guinea-pigs, and rats were the animals used. The cover-glasses which had been prepared with crude pus were stained with methyl violet or with gentian violet by the Gram method. They were stained also for tubercle bacilli. I have determined to report to you my results in twelve cases of empyema, and I will divide them, as Fraenkel, into groups.

GROUP I.—This group includes those cases in which the bacterioscopic results are not uniform, and in which the micro-organisms found are not diagnostic. The streptococcus pyogenes or the staphylococcus pyogenes aureus were found. I have three such cases to report. Thus far they occurred in children aged seven years (female), eleven months (male), and twelve years (male), respectively. In all of these cases the history, prior to and during illness, failed to elicit any clinical possibility of tuberculosis. In all, the bacterioscopic results were as above. I leave the clinical histories of all the cases of this paper for future publication. In two cases the streptococcus or chaincoccus was found which in every way as to growth and action corresponds to the streptococcus pyogenes. In the third case, a child, aged eleven months, the staphylococcus was found which in every way corresponds to the staphylococcus pyogenes aureus. The above group finds its exact counterpart in the group of similar cases investigated by Fraenkel in the

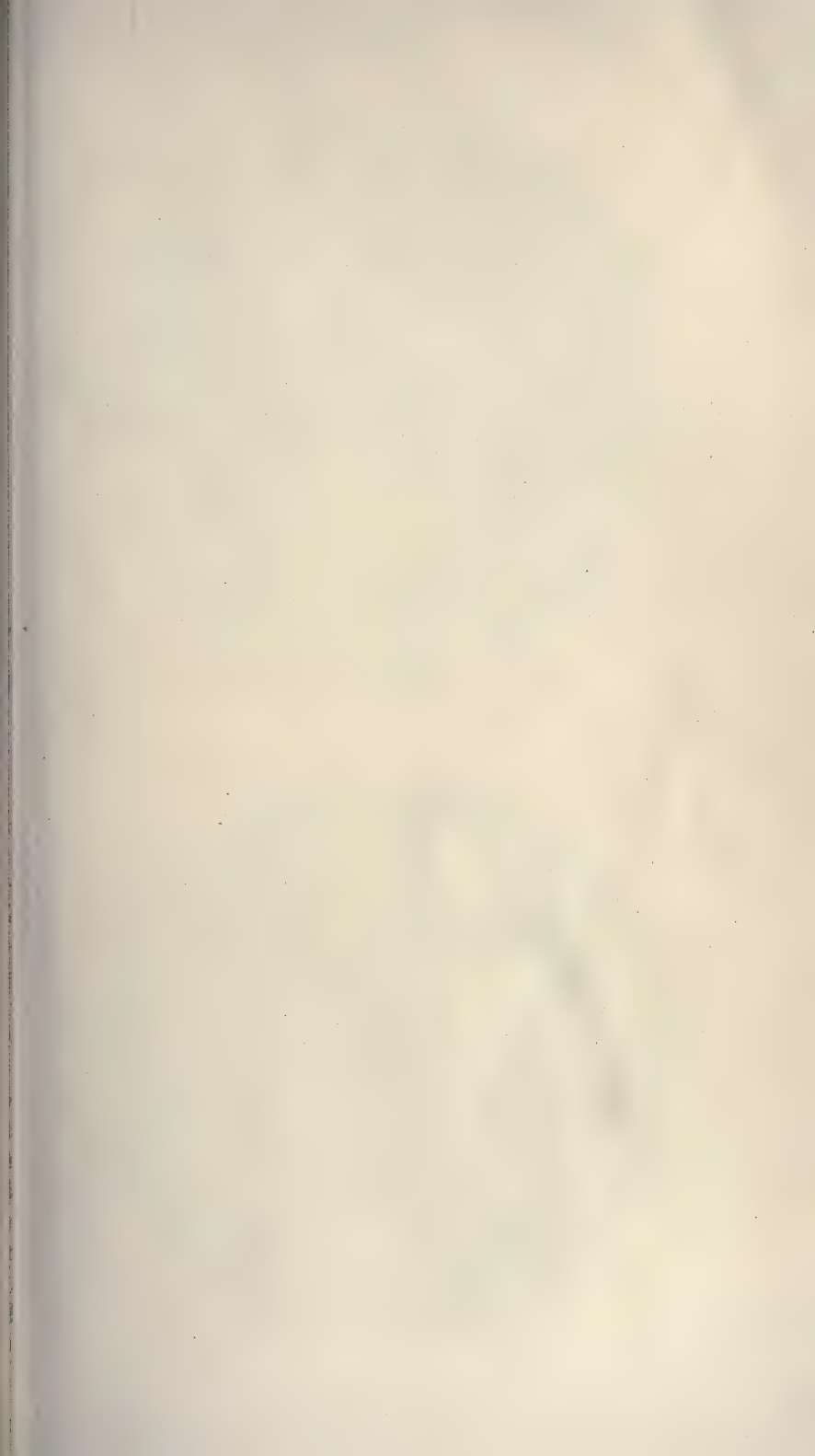
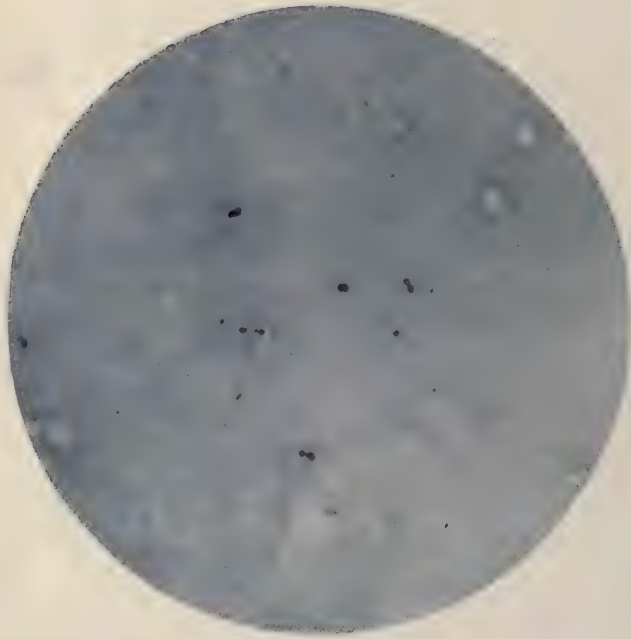




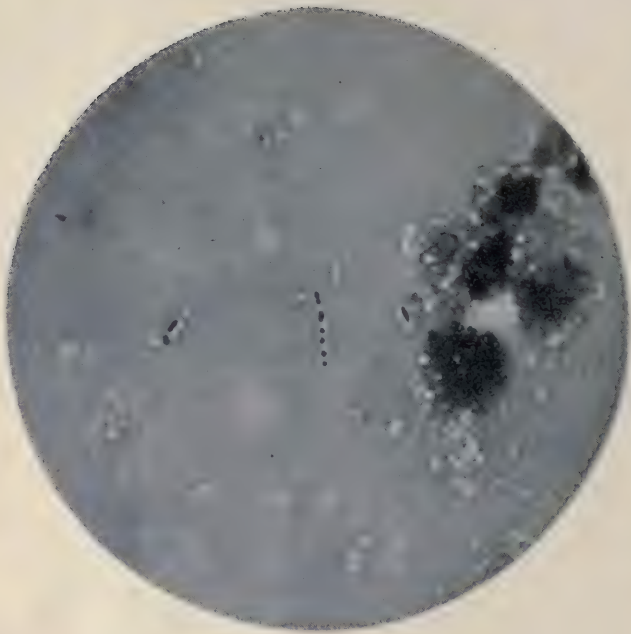
PLATE I.



(MICRO-PHOTOGRAPH.)

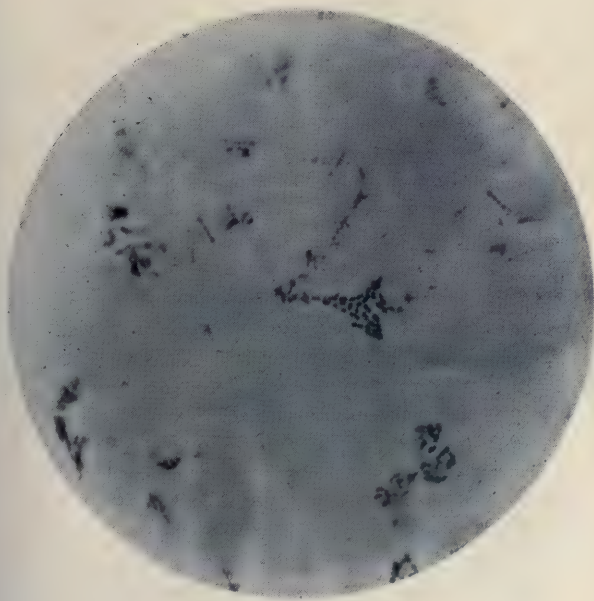
1. *Diplococcus pneumoniae* in the crude pus of Group II, spread upon a cover-glass and stained with gentian violet; shows the capsule; Zeiss apochromatic lens, projection ocular No. 2;  $\times 1000$ ; zircon light.

PLATE II.



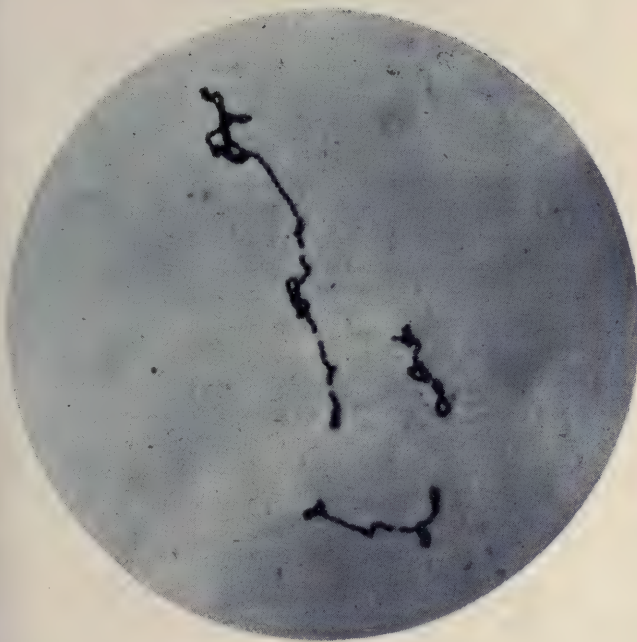
(MICRO-PHOTOGRAPH.)

2. *Diplococcus pneumoniae* in the crude pus of empyemas of Group II. Shows capsule, diplococci single and in chains, also the "candle-brake shape." Cover-glass specimen; gentian violet; Zeiss apochromatic lens, projection



(MICRO-PHOTOGRAPH.)

3. Pure culture of diplococcus pneumoniae obtained from the pus of a case of empyema in Group II. Agar culture; Gram stain; Zeiss apochromatic lens, projection ocular No. 4;  $\times 1000$ ; zircon light.



(MICRO-PHOTOGRAPH.)

4. Pure culture of streptococcus pyogenes obtained from the pus of a case of empyema in Group I. Bouillon culture; cover-glass specimen; gentian violet stain; Zeiss lens as previous specimen;  $\times 1000$ ; zircon light.





adult. Eliminating the presence of tuberculosis, we are still in doubt as to the exact etiology of these cases; we might with Fraenkel suppose that they could have complicated a pneumonia, for Weichselbaum proved that in pneumonia there were present (as mixed infections) both the streptococcus pyogenes and the staphylococcus pyogenes aureus. Again, these empyemas could arise spontaneously, as explained above, with the predisposing aid of exposure and cold or a slight traumatism, the above micro-organisms being present in the subpleural tissues. In none of my cases was a traumatism mentioned in the history. On the whole, it seems uncertain as to how these empyemas originate. The organisms found, as you see, are not characteristic.

GROUP II.—This group includes those cases in which I have been able to establish the presence of the pneumococcus of Fraenkel and Weichselbaum in the purulent exudate. This organism was found in pure form and uncontaminated in all the cases of this group. I was perhaps fortunate in working with a simple purulent exudate and obtaining my specimen pure and uncontaminated. In all the cases the crude pus spread upon cover-glasses and stained showed the capsulococcus singly or in pairs or chains, and the lancet-shapes could be beautifully seen. These diplococci could be well stained by the Gram method. The pure cultures with Weichselbaum agar were characteristic, and I leave their description for a more lengthy paper. There are seven cases to report in this group, six males and one female child, aged five years, twelve months, two and a half years, three and a half years, two years, and two and a quarter years, respectively. I wish to direct particular notice to two cases of this group. In both of these cases the effusion, when drawn from the chest with the hypodermic syringe, was at first clear and serous, in one case being devoid even of fibrin flocculi. In both cases, however, the diplococcus pneumonia was isolated in pure culture, and its virulence established upon animals. This micro-organism could also be stained by spreading a drop of the crude exudate upon cover-glasses. If a drop of this exudate were placed under the microscope, the diplococcus could be seen, as also a few lymphoid cells. These cases subsequently became pronounced

empyemas, the serous having turned into a purulent exudate. This tends to support the assertion of Fraenkel that when an exudate, serous in character, contains streptococci, it can be predicted that it will shortly become markedly purulent. The same could be stated of the diplococcus pneumoniae, for we know of its established capabilities to produce suppuration. The above also shows that the character of a serous exudate cannot be established until examined bacteriologically. In this way we can make a differential diagnosis between those exudates which, like the above, are acute in character and those which are serous, and contain no micro-organisms and fail to give any results with our media, and the majority of which, in the *adult* at least, are tubercular. The presence of a serous fluid in the hypodermic may be of little use in proving the purulent character of the fluid in the chest as far as gross appearance is concerned. It is well known that the pus of empyema, even in the chest, has a tendency to separate into two portions; that portion in the dependent part of the chest may contain most of the lymphoid cells and be markedly purulent to the macroscopic examination, while the upper stratum which we have aspirated may be serous. The clinical diagnosis of pleurisy with serous effusion is only temporary at best, and we must be always on the lookout for pus, especially if the serous fluid aspirated contains streptococci or diplococci. It has been customary formerly to assume that if a fluid has been serous at the first aspiration and subsequently became purulent, it had been contaminated from without by the hypodermic. If such effusions had been carefully examined, I am sure micro-organisms would have been established at the very outset. When a serous exudate has from the very first been proven free from organisms and then subsequently turns purulent, then we may think of some contamination or mixed infection. When the bacterioscopic result is as positive as in the cases of this group, I think it is not necessary to prove the clinical presence of a pneumonia in order to trace the origin of the empyema. The isolated presence of such a virulent micro-organism as the diplococcus is sufficient proof as to the origin of such inflammatory processes of the pleura. As stated above, the cultures of all the cases in this group were

inoculated upon animals with results identical with those of Fraenkel and Weichselbaum. I shall publish them in the near future.

GROUP III.—Empyemas occurring in tubercular subjects, as far as investigations in the adult teach us, may be encapsuled and localized to narrow limits by adhesions in the chest, or they may be diffused over the whole pleural surface. They may complicate a tubercular condition of the lungs, or they may be present when there is no pulmonary tuberculosis. The general result is not changed by these conditions, the prognosis is always bad and conditional: a partial recovery is the result in the most favorable cases. The tubercular cases in the adult are the most unsatisfactory to treat. Though we relieve certain symptoms, other conditions are superimposed by our treatment which are not less harassing to the patient than were the symptoms of the original condition. In adults the bacteriological investigations may (Fraenkel) yield an absolutely negative result. Our inoculations of the pus from the pleural cavity upon various media yields us nothing, and thus far experiments upon animals have been equally unsuccessful. This may be because our present methods and media fail to reach these cases; or, better still, because, though the tubercle bacilli may exist in the pleural adhesions and the tubercle tissue of the adhesions and thickened pleura, they may be present in such small numbers in the exudate, at least in that withdrawn from the chest, as to fail to grow when artificially cultivated. When a case, upon careful examination of the pus, gives an absolutely negative result, we are justified in assuming the possibility of a tuberculosis. In most of these cases where post-mortem has been made tuberculosis has been established. The second class of cases of a tubercular nature are those in which the sputa of the patient and the pus of the empyema show tubercle bacilli, both by stain and culture. Lastly, streptococci have in some cases been found to contaminate the pus in some of these tubercular cases (Fraenkel). In this last set of cases a contamination is assumed from the subpleural tissues or the lung. In children, as far as I know, no parallel investigations to the above are on record. I have only one case to report, a boy of



eight years, in whom the empyema is tubercular. In this case tubercle bacilli were found in the pus of the chest, but it was contaminated by the presence of streptococcus pyogenes. This corresponds to an adult case of Fraenkel's. This patient is still alive, and, though walking about, carries a large suppurating cavity in the chest, which refuses to close in spite of the enormous contraction of the chest wall and extensive resection of numerous ribs. There are no signs of tuberculosis discoverable in the healthy lung. It was not possible to obtain the sputa for examination. Thus far my experiments upon animals with the pus have been negative, the results being clouded by the presence of streptococci. It is not at all impossible for a tubercular empyema to make, if localized, an apparent temporary recovery; but whether such recoveries become permanent it is at present impossible to say. It is also problematic in these cases as to what is the real focus of trouble; why should a tubercular area in the lung, for a long time dormant, suddenly cause an empyema? We could here also invoke the predisposing exposure or traumatism. Tubercular empyemas are the most difficult to diagnosticate in some instances during the life of the patient. In children it is not always possible to establish a tuberculosis of the lung by physical exploration; the sputa is also difficult to obtain. These little patients have been so harrowed by the disease and its results, and the presence of paraphernalia of the ward is so associated in their minds with suffering, that when a bottle or spit-cup is placed before them they resist all attempts to obtain a specimen of sputa.

GROUP IV.—The last group of empyemas in children belongs to that class of cases in which we can, with a degree of probability, point to a focus of suppuration situated outside the chest as the possible source of infection. These cases include pyæmic infections, and correspond to that variety of empyemas which, in the adult, are found complicating puerperal cases, or cases with retropharyngeal abscess or peritonitis (Fraenkel). The case which I desire to place in this group occurred in a child aged four months, breast-fed, which, for two weeks previous to the chest-trouble, had been suffering from a deep burrowing abscess on one foot. Just before the

appearance of this abscess the infant had been vaccinated, and at the time of consultation for the chest-trouble the vaccine pustule looked quite angry. The pus, withdrawn with the usual precautions from the chest in this case, contained streptococcus pyogenes, which, upon inoculation, proved virulent in action. An animal inoculated with this pure culture died with multiple abscess of the liver and lung, general jaundice, and a large soft spleen. This case proved fatal in two days after pus was established in the chest, in spite of operation, dying with all symptoms of pyæmic infection. No autopsy was permitted.

The conclusion to be derived from the above is a forcible one, tending to show what a large proportion of empyemas in children follow or complicate processes in the lung of an acute character. With early and efficient treatment we can look all these cases hopefully in the face. Even those whose etiology is uncertain do not hold out such a bad prognosis to the patient. The tubercular and pyæmic cases are the stumbling stones of pediatric practice.

#### DISCUSSION.

DR. BOOKER, of Baltimore.—During the last six or eight weeks we have had an unusually large number of cases of empyema among the children at the Johns Hopkins Dispensary, having had five cases within that time, and Dr. Shaw has been making some investigations from a bacteriological stand-point.

The president then called on Dr. Shaw, of Baltimore, who said,—

I may state some of the results of the investigation, as they bear a close relation to the admirable paper just read. It is my regret to say that no examination was made of the pus of the first case. In the remaining four the pneumococcus was found on each occasion. The pus from two of these was inoculated in each case into a rabbit and a mouse, with the results that the pneumococcus was obtained in a pure culture. The mouse of the first case died on the fourth day, and the autopsy showed all of the organs to be infected with the micro-organism as also the blood, but the results on the rabbit were frustrated, owing to the fact that the needle of the syringe perforated the intestine from which a peritonitis was set up, in the fluid of which the colon bacterium was

found. I may also say that the pneumococcus was likewise obtained, but no value was attached to the experiment.

In the second series of inoculation the rabbit died on the third day, with marked evidence of infection in all of the viscera as before, and the pneumococcus was again obtained in pure culture. The mouse lived for some time after, so no value was attached to the autopsy.

In the pus of all examined the micro-organism was in a form we have never seen it before, being in chains of from four to seven in number, and surrounded by a continuous capsule. Some of these had peculiar hooked ends. I might say that it was not obtained in this form from the animals inoculated.

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## DACTYLITIS IN CHILDREN.\*

BY LEONARD S. RAU, M.D.,

Attending Physician Out-Door Department, Diseases of Children, Bellevue Hospital, etc.

GEORGE H., aged two and three-quarter years, was brought to my class on the 10th of April, 1890, his mother giving the following history :

The child had been well since birth ; labor having been normal ; first tooth appearing when one year old ; anterior fontanelle closed at fifteen months. Began to walk and talk at the usual age. Five weeks ago she noticed a swelling of the first phalanx of the index-finger of the left-hand, this causing only a slight amount of pain. She believed that her husband had struck the child with a hammer on this finger, and as the swelling kept increasing and caused the child some pain she brought him to the dispensary, thinking the finger must have been broken.

The photograph (Fig. 1) shows the appearance of the finger better than it can be described. It is, however, to be regretted that this could not have been taken earlier, for at this time, namely three weeks after the child began treatment, the swelling has diminished very much. This swelling and hardness was found to exist more on the dorsal than on the palmar surface. There existed at no time any discoloration of the over-

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\* Read by title.





FIG. 1.—SHOWING ENLARGEMENT ON INDEX FINGER.



FIG. 2.—SHOWING CURVATURE OF THE SPINE.



lying skin; a slight crepitation could be elicited on manipulating the finger. After questioning the mother carefully as to previous history, she acknowledged that before the child was born (a few months) her husband had had some venereal trouble, but she did not know the nature of the trouble, and is positive that she has never been infected. The child showed no other manifestations of disease when examined by me for the first time, except that he appeared to be poorly nourished and was pale and emaciated. The case was diagnosed as one of strumous dactylitis, and the child was placed upon the following treatment:

R Ol. morrhue, ℥vi;  
Syr. calcis lactophos.,  
Liq. calcis, āā ℥iii. M.  
Sig.—A teaspoonful *t. i. d.*

This mixture being very extensively used in scrofulous children in our department and with the most gratifying results. The mother was instructed to massage the finger twice daily, rubbing it with unguentum hydrargyri, thus giving the child the benefit of the doubt as regards the possibility of the disease being of a syphilitic origin.

The child remained away from the clinic for over two weeks, and on returning was found to be suffering from an enterocolitis, which was due to an error in diet. This was at once corrected. The mother has also noticed during these past two weeks that a swelling has appeared along the spine between the scapulæ (Fig. 2); there appears to be a beginning antero-posterior curvature. Within a few days there has also been a purulent discharge from the left ear. The swelling in the finger has diminished and now causes the child no pain whatsoever.

When last seen (May 27) the child's condition was much improved. He has gained in strength and weight, and the swelling on the finger is only slight. The same treatment is still continued, though not as regularly as might be desired, the mother being very ignorant and does not appreciate the importance of carrying out the directions.

I have gone into the history and progress of this case at



considerable length, because I find, in looking up the literature of this subject, that there exists considerable diversity of opinion in regard to dactylitis in children, and that the strumous form particularly does not seem to be well known.

The disease was first brought to the notice of the profession by Chassaignac\* in 1859, but the subject was not made clear until the publication of R. W. Taylor's† excellent paper in 1871.

There appears to be two prime etiological factors in this disease, one a strumous diathesis, the other syphilis. The latter form is by far the more common; in fact, most authorities entirely ignore the strumous variety; and Taylor, in the article just cited, says, "The tendency of the so-called strumous inflammation to localize itself in bone rich in cancellous tissue, particularly those of the carpus and tarsus and the expanded extremities of long bones, renders it probable that it rarely if ever attacks the phalanges." That such cases do exist, however, seems beyond a doubt, as shown in Professor J. Lewis Smith's case,‡ described in his work on diseases of children. Henoch§ also gives the histories of several cases, calling the disease in this form *pædathrocæ*, and I think that the subsequent history of my case entitles it to be placed under this same category. When the disease is of a syphilitic origin it is almost always hereditary (very rarely acquired, and then usually in adults) and makes its appearance in the first few months after birth, whereas the strumous variety does not appear until the close of the first or during the second year. The phalanges of the fingers and of the toes may be affected, the fingers being the seat much more frequently than the toes, and Henoch claims never to have seen a case occurring in the toes of the syphilitic variety. Wigglesworth|| describes several

\* Chassaignac, "Clinique Europeenne," 1859, p. 238.

† R. W. Taylor, *American Journal of Syphilis and Dermatology*, January, 1871.

‡ J. Lewis Smith, "The Diseases of Infancy and Childhood," 1886, p. 139.

§ Henoch, "Vorlesungen über Kinderkrankheiten," 1887, S. 797.

|| Wigglesworth, *American Journal of Syphilis and Dermatology*, January, 1872.

cases in which the toes were affected, one in an adult and the other in a child three years old with hereditary syphilis. The first phalanx is generally affected first, but any of the others may be, and the affection may extend from one to two or more phalanges. Most authorities agree that the affection is a rare one excepting Gross,\* who claimed that it was not at all uncommon and that he had seen a great many cases. I have made inquiries at several of the dispensaries where large numbers of children are treated annually, and the attending physicians assure me that the disease is exceedingly rare with them, most of them having seen only a very few cases in a number of years, and others none at all.

In syphilitic dactylitis we have a deposit of the peculiar gummy material of tertiary syphilis, occurring in one or in all of the deeper structures, and producing a peculiar deformity, the swelling of the bone being found more over the dorsal than over the palmar or plantar surface. We recognize two distinct forms of syphilitic dactylitis. One an inflammation between the periosteum and the bone, constituting a specific periostitis; the other, an involvement of the cancellous tissue around the medulla, forming an osteomyelitis. The tissues overlying the bone may or may not be involved, and the disease may extend to the joint and affect the synovial membrane. The skin has a livid hue and is tense, this disappearing as the swelling diminishes. The condition of the tissues seems to be one of colloid degeneration, and when these tissues break down, as sometimes happens, sinuses are formed from which exudes a yellowish-brown material, which, under the microscope, is shown to consist of granular, amorphous matter, sometimes bone-cells but never pus-cells, for the disease does not undergo suppurative changes.

Patients complain of little, if any, pain, which, when it does exist, is of a gnawing character. Sensation is not disturbed, and where the joint does not become involved motion is normal and causes no pain. The nails are never included in the process. Sometimes a distinct crepitation can be made out, this being of an albuminous character. The patients usually come

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\* Gross, "System of Surgery," 1882, vol. ii. p. 1012.

- under treatment for other ailments, this condition being so trivial, except for the deformity, as to have gone unnoticed.

It is important to differentiate the two varieties of dactylitis from each other. This can only be done by obtaining a careful history, both as to the health of the parents and concerning the child's condition since birth. If the disease comes on in the first few months it is of the syphilitic variety. Should any doubt exist, it is well to give the patient the benefit of the doubt, and place the child on the antisymphilitic treatment, and thus the treatment would also aid in clearing up the doubt as to the origin of the disease. The disease must be differentiated from gout, but in gout we have an acute invasion, pain, and the previous history. The disease could also be mistaken for rheumatoid arthritis, but in the latter affection the joints are involved, there is no swelling of the phalanx, but a peculiar angular deformity of the finger and the integument remains normal. Besides, gout and rheumatoid arthritis are exceedingly rare in young children, even much rarer than dactylitis. Furthermore, the disease must be differentiated from enchondroma and exostosis, but in these affections the swelling occurs more on the palmar or plantar surface than on the dorsal, and they grow slowly, and present a hard, well-defined tumor.

The prognosis in both forms is good, especially if the case comes under treatment early.

The treatment, of course, depends upon the causation. If the dactylitis be of the strumous variety, we should attend especially to the diet and the hygienic surroundings. Give the child cod-liver oil and the hypophosphites, syrup of the iodide of iron, cold baths, etc. When the disease is due to syphilis, use the iodide of potassium and mercury internally in combination. Use inunctions of unguentum hydrargyri or the oleate. A useful plan is to massage the affected phalanx, employing the ointment or the oleate of mercury. Under these plans of treatment the swelling will diminish, the sinuses close, and the disease disappear in the course of several weeks or months. Operative interference is never necessary and should be condemned.

HOFFMAN ARMS, 640 Madison Ave., New York.



## A CASE OF SARCOMA OF THE KIDNEY.\*

BY FREDERIC M. WARNER, M.D.,

Visiting Physician to Charity Hospital, Physician to Bellevue Hospital, Out-door Department (Diseases of Children), New York.

PRIMARY malignant disease of the kidney, when occurring in childhood, makes its appearance, as a rule, under the age of three years, and is characterized by the rapid growth of a tumor, the appearance of which is, in the majority of cases, the first manifestation of the affection.

The mass is primarily observed situated between the free margin of the ribs and the crest of the ilium, gradually making its way forward towards the umbilicus, upward to the hypochondriac, and downward towards the inguinal region; in extreme cases it may finally nearly fill the abdominal cavity.

When the right kidney is affected, the liver is displaced to the left and may be twisted upon its transverse axis; especially is this so when the growth extends from the upper portion of the kidney into the right hypochondriac region.

When the tumor is of the left kidney, the stomach is diverted forward and to the right, and the spleen is displaced upward. By examination the mass appears smooth and rounded, or may be lobulated, and there is generally a distinct sense of fluctuation to be obtained over portions of it.

The *colon* may always be found lying in front of the tumor. This rule is invariable, and the difference in the percussion note over the gut reveals its situation.

The only other symptom of importance besides the presence of a foreign growth, is one which is constant in about fifty per cent. of the cases, and that is *hæmaturia*.

The hemorrhage may be either acute and profuse in quantity, so much so as to cause death; or, acute and in small amount, giving rise to no symptoms or disturbance; or, very small in quantity and pretty constant; or, infrequently, and very little at a time, so as only to be detected by means of the microscope.

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\* Read by title.

In some cases hæmaturia has been the first symptom of the disease; in any case it is of great importance in making a diagnosis, and in those instances in which it is absent it is probably due to the ureter being occluded by the growth, or by the pressure of the tumor.

The other symptoms of cancer of the kidney are variable; of these, *pain* may or may not be present. Generally the patient, when old enough to discriminate, does not complain of the tumor, except of the inconvenience consequent on its weight and size; *gastro-intestinal* troubles are pretty constant; *œdema* of the lower extremities and face occurs; *emaciation* rapidly takes place, and the *skin* presents a well-marked cachexia, and death results from exhaustion.

The duration of the disease varies considerably. The majority of the patients, however, succumb between eight months and a year from the onset.

In size the tumor averages about seven pounds. Roberts\* mentions one weighing thirty-one pounds, the age of the patient not given. Spencer Wells† records a case in which the tumor weighed between sixteen and seventeen pounds in a child of four years.

The following is the history of a case occurring in my own practice, which presents quite the typical course of the disease:

On October 19, 1885, a child was brought to me by the mother, presenting for examination a tumor, which had been first discovered by the parents the preceding evening. The child, a fat, healthy-looking infant, six months old, had never been sick until a week before, when it suffered from an attack of vomiting and diarrhœa, which yielded to domestic remedies.

Upon examination, I found a large swelling occupying the entire left lumbar region and extending up under the ribs; it could be mapped out in the back nearly to the spinal column, and in front it presented a convex border, the greatest horizontal diameter of the mass being opposite the umbilicus; below it dipped down into the pelvis. It seemed to be round or oval in shape and was quite hard to the touch.

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\* Urinary and Renal Diseases.

† Abdominal Tumors.



SARCOMA OF THE KIDNEY.





The mother said that some time previously, she thought when the child was six weeks or two months old,—she could not tell the exact time,—the baby was lying on a pillow on the floor before a long window opening out on a piazza; that a little sister five or six years old, running in, had stepped on the child's side with her full weight, but there had never been noticed any bad effects until now.

From the time when I first saw it the tumor grew rapidly, but it was not until November 4 that any impairment of the child's health was noticed, when it commenced to vomit a greenish fluid. I was not called until the 6th, when I found the child apparently in a state of collapse. It still vomited, had had two small evacuations from the bowels, but had passed no urine in twenty-four hours, and had greatly emaciated. It had refused to nurse, and I noticed regular automatic movements of the right hand and arm, up to the head and down again; the eyes were staring and the child cried frequently as if in pain.

Under appropriate stimulation and other treatment the child rallied, and in a couple of days was apparently as well as ever, except that it now commenced to pass urine in small amounts and very frequently, as the tumor was growing very rapidly, and encroaching considerably on the territory of the bladder.

I lost sight of the child again until February 15 of the following year. I found that during this time the mass had grown greatly, occupying apparently nearly the entire abdominal cavity; it was distinctly elastic and nodular, which last condition is well shown in the accompanying photographs taken at this time.

The patient had greatly emaciated; the skin was of a dirty-white color, and the abdominal distention was coursed by large superficial veins; the eyelids were puffy, and there was considerable conjunctivitis; the feet, and legs up to the knees, were much swollen; the bowels were quite regular, and the child was passing a good amount of water and at not very frequent intervals; all of this time the appetite was voracious, desiring to nurse constantly, the mother being possessed of a good supply of milk.

There was ever-increasing restlessness, but no return of the

automatic movements previously observed, and no apparent pain; the patient seeming merely to suffer inconvenience from the mechanical presence of the mass.

Pertussis now appeared as a complication, and from this time until her death, from exhaustion, on June 26, eight months after the first appearance of the tumor, I saw her daily; she gradually emaciated and the mass grew larger.

At the autopsy, eight hours after death, I removed a large tumor, occupying nearly the entire abdominal cavity; the body had but a small pedicle, and shelled out easily, being attached by only a few slight adhesions.

The gross appearance was of an enormously enlarged kidney. On microscopic examination it proved to be a spindle-celled sarcoma. The right kidney was found to be quite healthy. This explains why the urine continued to be normal, as the diseased kidney was shut off from the bladder by the occlusion of its urethra from compression.

In reference to the etiology of this affection, I am of the opinion that congenitally a pathological growth exists, which in some instances commences to increase from no known cause, unless, as is clearly demonstrated in the case I have just related, the excitement be produced by a traumatism.

It is possible that the growth may remain latent during childhood and middle life, and not begin to increase before old age, which, as we know, shares with extreme youth the dangers of this disease; further, it is possible that cases have occurred, and will occur, in which this pathological growth will remain latent during lifetime, never increasing nor giving rise to any symptoms.

The *treatment* of malignant disease of the kidney, is removal of the mass, and this should be done early; there is no likelihood that there will be many or strong adhesions; secondary deposits in other organs are not liable to be present, and as a rule the other kidney is not affected.

If we do not have recourse to operative measures a fatal termination is inevitable. If my patient had been operated on when I first saw it, when apparently in good general condition, although the tumor might possibly have weighed a couple of pounds, its life might, in my opinion, have been saved.



Grancher, in the *Journal de Méd. et de Chir. Pratiques* for September, 1889, while discussing the occurrence of renal tumors in several children which were observed in the Hôpital des Enfants Malades in Paris, in referring to the treatment of such cases, urges, where the condition is early recognized, and without evidences of serious functional disturbances, that extirpation be resorted to.

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## ON WHAT EARLY SYMPTOMS MAY WE REST A DIAGNOSIS OF TUBERCULAR MENINGITIS?

BY W. P. NORTHRUP, M.D.,

New York.

TUBERCULAR MENINGITIS, no one will deny, is difficult of diagnosis. There is no other lesion in infant life which creeps in so unsuspected, which develops so quietly, and whose fateful growth may place the physician in such awkward attitude. It fails to appear when foretold; more often steals in unlooked for.

This paper proposes a question,—What three or four symptoms do you, severally and individually, regard as the most reliable signs of tubercular meningitis in infant life? For the sake of giving point to the discussion, I limit it to any four symptoms and to the first two years (of life). My own answer to this question I give at the outset and illustrate with cases, the object in pursuing this rather unusual order being to make more clear the points I propose to bring out. On these four legs, then, will I rest my diagnosis:

1. Persistent vomiting.
2. Irregularity of pulse.
3. Irregularity of respiration.
4. Apathy.

I was recently invited to see in consultation a bottle-fed infant ten months old. The child had been under the care of several different practitioners in different parts of the country, as it travelled about, and the sources of information regarding

its history were necessarily scattered. Eventually a full and satisfactory record was obtained, but I am going to relate the case to you, giving the information as it came to me, and finally the completed history gathered from different sources. An infant, when five to six months old, was taken abroad for the summer, spending two months in Paris. The child was fed from the bottle, and remained with a faithful nurse in town while the parents made occasional excursions elsewhere. Up to one month before the beginning of the illness which interests us the child had never been sick. A physician, a friend of the family, accompanying the party from Paris to Liverpool on their way home, remarked how well the child looked, how happy, even merry, it was, how healthy its flesh seemed, while its color and general development bespoke a most promising child. After a few days' sojourn in Liverpool in perfect health it entered upon an eight-day voyage for this port. On board ship it was fed on canned condensed milk. On the morning of the eighth day the mother concluded that the contents of the open can were not just right, and a second was opened. On sniffing it she detected a decided odor of decomposition, and the two cans were thrown overboard. A third can was opened, and from this the child was fed. Scarcely had the portion been taken when the entire contents of the stomach were vomited. Nothing more was given it on ship-board, as in the afternoon the passengers were to be landed, and fresh milk could be obtained. This was the first vomiting. In the evening the child was fed on fresh cow's milk in this city, and again vomited. A physician was called, found a temperature of 101° F., prescribed for the case, and sent the family to the country to the care of a third physician. Though fed on the choicest of milk, it continued vomiting after feeding. A week later the family returned to town and to the care of several more members of the medical profession. The child continued to vomit after feeding, maintained a temperature of 100° to 101°, was moderately constipated, and was said to have been drowsy and rather stupid during the last of its stay in the country. The city physician very wisely administered a mild cathartic to the patient, which resulted in a copious passage of greenish, offensive mucous masses with

coagulated milk. The case was seen at this time by an eminent consultant, who declared it was impossible to pronounce on the case on one observation, and reserved judgment. On the second day thereafter he saw the child again and diagnosed tubercular meningitis without reserve, gave an absolutely unfavorable prognosis, saying the child could not live twenty-four hours. On the morning of this day the temperature had suddenly mounted to  $105^{\circ}$  F. Later in the day it sunk to  $103^{\circ}$ .

It was in the evening of this day that I was privileged to see this interesting case, and please remember I am giving you at this point only the history that was obtained at that time, meagre and unreliable.

A child of healthy young parents, in the tenth month of its life, after uninterrupted good health and satisfactory growth and development, suddenly vomited after taking food preserved in tin cans, and which was in a doubtful condition of preservation. For a week or more it continued to vomit after feeding, though supplied with fresh cow's milk in the country. Later it became languid, occasionally drowsy or even stupid. Its bowels were at times loose, later inclined to constipation. Cathartics effected a movement copious, dark, offensive, containing greenish mucous masses, and once a small amount of blood. After such passages the child became brighter for a time. One or two days previous to my visit, it developed ptosis of left, dilatation of left, internal strabismus left. One day previously a temperature of  $105^{\circ}$  to  $103^{\circ}$ ; pulse said to have been small, thready, regular; respiration rhythmic. There had never been any convulsions, so far as learned, nor screaming, nor irritability.

The child was lying in its crib, apparently sleeping, its color a little pale, with slight blueness about the lids. There was nothing about its appearance to attract attention, except a rather dull, relaxed, mask-like expression, or rather utter lack of expression,—a *dead look*. Its eyes were fully closed; there was no inequality in the two sides of the face. The anterior fontanelle, about an inch and a half across its angles, was level, normal. There was nothing about the condition of the skin or superficial veins to be noted over either the scalp or



of any part of the body. Abdomen normal, head inclined to turn to the right. No rigidity, no stiffness of back of neck, no automatic movements. In short, the infant was sleeping, so far as outward appearances went, excepting the expressionless, mask-like countenance. As to respiration, it was quiet, about thirty to the minute; after careful watching and listening, it seemed to me irregular in depth, but not markedly so. No irregularity had been observed by those in attendance, and after still further listening and watching, I concluded that this point was at least doubtful. The pulse was counted for several consecutive half-minutes, and was found to be beating 120 to 150 per minute, without intermission and without sensible variation in force or frequency. On examination of the eyes, the result corresponded to the observations recorded above,—viz., pupils unequal, dilatation left, reacting tardily, internal strabism left.

Here is related an experience familiar to you all, and is of value for the purposes of this paper. The question before the physicians in consultation was, whether there was any possible escape from the diagnosis as pronounced above. Their own observations were of short duration and the previous history was from unreliable sources. Might these cerebral symptoms be associated with gastro-enteritis so obviously present? could they arise from anything but meningeal lesions?

Let me set forth once more the main points. A well-nourished child, ten months old, with good parentage, had been sick seventeen days. Symptoms: vomiting after feeding, offensive mucous passages, once containing blood, drowsiness, varying in degree and temporarily relieved by catharsis, for two days ptosis, strabismus, inequality of pupils, temperature  $105^{\circ}$  to  $103^{\circ}$ , stupor. No history of convulsions nor irregularities in pulse or respiration.

It will be noted that the elevated temperature was coincident with the accession of several new symptoms, a low temperature being characteristic of internal meningitis.

Just at this point in the consideration of the case in hand, let me call your attention to the following cases in which the histories are complete :

CASE I.—Cerebral symptoms with entero-colitis. Autopsy, —child two years old. This child was returned to the New York Foundling Asylum by its nurse, because besides diarrhoea it had “spasms of the face.” On entrance it had left facial paralysis well marked, paralysis right hand and foot slight, ptosis left, pupils equal, alternately contracting and dilating, difficulty in swallowing, movements of limbs limited, stiffness of neck, lying flat on its back, conscious, making no sound. Temperature,  $104\frac{1}{4}^{\circ}$ . During the next twenty-four hours it had repeated general convulsions, and died with œdema of the lungs.

*Autopsy.*—Brain normal, mesenteric lymph-nodes enlarged, simple hyperplasia, small intestine contained an extraordinary amount of thick mucous masses, solitary follicles enlarged and many of them ruptured. Peyer’s plaques markedly swollen; one in mid-illum excessively so. Large intestine in much the same condition, the contents being darker. Briefly: A well-nourished child, two years old, diarrhoea two weeks, “spasm of face,” paralysis, left facial, right ptosis, right hand and foot, oscillating pupils, dysphagia, stiffness back of neck, general convulsions.

CASE II.—Cerebral spinal symptoms with entero-colitis. Child six months old; female; always in “poor” condition; dullness left apex;  $103^{\circ}$ . Three days later, *opisthotonos* marked, restlessness, alternating diarrhoea and constipation, vomiting, glandular enlargements, sunken abdomen. *Opisthotonos* increased for twelve days and became continuous; when the occiput and heels were placed on the table the vertical distance from the plane of the table to the highest part of the arch formed by its body was four or five inches. On autopsy the peritoneum had a “washed-out” appearance; the intestines contained greenish mucous masses, the walls of the gut being very thin, pale, and transparent. Brain and cord were normal; kidneys, normal; middle ears, normal; long bones, normal. Here was vomiting, *opisthotonos*, alternating diarrhoea and constipation, lumbar abdomen, lesion entero-colitis.

CASE III.—Cerebral symptoms; entero-colitis. Male, three months old. Marasmus, convulsive movements of eyes,

strabismus. It would apparently be looking fixedly at the tip of its nose for a fraction of a minute, the eyes quivering; the spasm then would relax for a minute and begin again, so continuing, the intervals being longer at times.

*Autopsy.*—Catarrhal enteritis, swelling of follicles, single and agminate, with enlargement of lymph-nodes of mesentery. Brain “wet,” œdema of pia-mater.

CASE IV.—Gastro-entero-colitis; cerebral symptoms. Female, six months old; was under observation two days; bulging tense, fontanelle marked, rolling head, blindness, nothing attracting its attention; eyes widely open and staring; pupils equal and reacting; died without convulsions. Body emaciated; fontanelle two inches across angles; sutures ununited; general appearance of rickets.

*Brain.*—Normal.

*Stomach.*—Contents viscid mucus, abundant; mucous membrane red in patches; sodden intestines; increase mucus, tenacious, jelly-like, stained with bismuth, also greenish masses of mucus; solitary and agminate lymph-nodules; swollen and ulcerated at apices. Colon in much same condition; mesenteric lymph-nodes uniformly enlarged, pale, red; peritoneum having a washed-out appearance. There was a marked and tense bulging fontanelle, blindness in a lesion of alimentary canal.

CASE V.—Cerebral symptoms; antral pneumonia; recovery. Female, three years old.

In the service of Dr. O'Dwyer I recently saw at the New York Foundling Asylum an interesting case, and all the more interesting because I was at that time studying the cases reported in this paper.

A dark-skinned girl was lying in her crib, scowling and staring straight before her. The eruption of measles had just disappeared. For a time the temperature had run along  $104\frac{1}{2}^{\circ}$  to  $103^{\circ}$ , and at last, on the fourth day, dropped to  $100\frac{1}{2}^{\circ}$  rectal.

On the fifth day it mounted again to  $103^{\circ}$ , then to  $104^{\circ}$ , and with this increase came the stupor which now attracted attention to her anew. Eight days after the first eruption of measles, and three days after the second rise of temperature,



the symptoms were as follows: Squint (which proved to be congenital), dyspnoea, result of chest examination negative, stupor going on to coma, constrained posture, eyes sometimes open, sometimes closed, always scowling, hands clinched, and elbows raised. She seemed never relaxed, but rather under tension, as though prepared to respond to every jar or sharp noise with a quick jerk or short spasm. When spoken to, she gathered up her face as if to cry, and emitted a faint peculiar whimper. At times she was blind; at others a watch and dangling chain would attract her attention. *Tâche cérébrale* was absent; pulse 132 to 160 per minute, regular, after repeated counts; respiration 40, rhythmic. No stiffness of neck. A night cry was described by the nurse which was fairly characteristic of meningitis. While we were in the ward the child had two or more mild convulsive seizures with marked opisthotonos. At this time Dr. O'Dwyer made out dulness over the root of the left lung without bronchial breathing. At this particular moment Dr. O'Dwyer stood alone in his diagnosis of pneumonia with cerebral symptoms.

Here was a scrofulous, dark-skinned child, scowling, apathetic, blind, having repeated convulsions with opisthotonos, crying out at night, slight inequality of pupils. Granting it had the faint dulness over one root, there might easily be tuberculosis beginning its work then as well. I confess I believed this was tuberculous meningitis. "All signs fail in dry weather," and, in case of doubt, a dark-skinned child (part negro), is sure to prove to be tuberculous.

Here, then, while collecting cases for preparing this paper, I ingloriously laid aside the very legs upon which I am going to advise you to rest the burden of diagnosis. To this I will refer later. I have admitted you into the confidence of the visit in which my diagnosis had its best outlook and most adherents. I was not at all sure there was even the slightest dulness, and all doubting parties present came over to my side. A few days later,—two or three,—all other symptoms remaining the same, the dulness became distinct over the left lung, and was acknowledged by all. The case gradually cleared up, all physical signs of deep-seated pneumonia disappearing; and step by step with it departed all cerebral symptoms. I have this very

day seen the child trotting about, with still a slight amount of strabismus, without the frown and without remnant or suggestion of a previous lung lesion, except a few râles, possibly intrapleural.

Let us see now on what Dr. O'Dwyer based his faith in his diagnosis.

1. There was a history of measles five to eight days before, at the same time he believed he made out slight dulness in the left axilla, high up.

2. Temperature was too high,  $103^{\circ}$  to  $104^{\circ}$ . It may here be added, the temperature had continued rather high through the five days of measles,— $104^{\circ}$ ,  $104\frac{1}{2}^{\circ}$ ,  $103^{\circ}$ ,  $101\frac{1}{4}^{\circ}$ ,  $100\frac{1}{2}^{\circ}$ ; then up to  $103^{\circ}$ , with a beginning of stupor.

3. No stiffness of back of neck.

4. No persistent vomiting,—vomited twice.

5. Pulse was rapid, regular, without marked variation from time to time.

6. Respirations, forty per minute, rhythmic, no sighing, no variation in depth, no approach to the characteristics of the Cheyne-Stokes respiration.

I may here add, it had not the dull, expressionless countenance referred to early in the paper, but rather an expression of irritability, often described as belonging to the first stage of (simple) meningitis. It will be observed that none of these cases showed inequality of pupils.

Now, to return to the consideration of our first case, ten months old, sick seventeen days. Was there any escape from the diagnosis of tubercular meningitis? There was a good history of gastro-entero-colitis, drowsiness varying in degree, ptosis for two days, strabismus, inequality of pupils, temperature  $105^{\circ}$  to  $103^{\circ}$ , increasing stupor, without history of convulsions, and, so far as known, without irregularity of pulse or respiration. Among the entero-colitis cases with autopsy we found drowsiness, oscillating pupils, "spasms of face," dysphagia, stiffness of neck, opisthotonos, vomit and constipation, bulging fontanelle, blindness, ptosis, strabismus, local paralysis, and convulsions. There was then a possible escape from the diagnosis, taking into consideration the history before us, the observations then made, and bearing in mind the

cases just presented before you. It readily resolved itself at that moment of consideration into a question whether it was tubercular meningitis or gastro-entero-colitis with cerebral symptoms.

I will now invite you to the confidences and revelations of second consultation two days later. In the interval between, the child had been given the benefit of doubt. The ice-cup was continued on the head, a full calomel purge was effected, hot baths and frequent internal stimulation added. The child looked brighter, opened its eyes, watched the nurse about the room, its ptosis diminished, and strabismus was believed to have temporarily disappeared.

Two days later,—third consultation,—inability to swallow, bulging tense fontanelle, Cheyne-Stokes respiration, scaphoid abdomen, imperceptible pulse. Twelve hours later, death.

After carefully going over the history with the mother, with the nurse, with the various physicians in attendance, and communicating with the physician in the country; after putting together all the facts coming out in whatever way I have collected them together here, and now lay them before you, let me rehearse again this most instructive and most typical case of tubercular meningitis. A child nine and a half months old, of healthy young parents, itself in apparently excellent general nutrition, suddenly began to vomit all food. It cried in the night rather immoderately (so the nurse remembered), bowels irregular, sometimes constipated, sometimes loose. In the first week of vomiting (the mother voluntarily added this) it “cried out” in its sleep as though having “bad dreams.” It was sensitive to light, scowling and showing irritation; was not sensitive to sounds; indeed, slept rather better in cars or carriage. Sighing was occasional, and was noticed by the attendants; automatic movements, sweeping its hand over its face as though brushing away a fly, repeating these movements over and over, also putting its hand to its ear. No hyperæsthesia, no stiffness of neck. The child was considered more than ordinarily irritable, even before its first vomiting, and was thought to have a staring expression. During the second week drowsiness began and increased, but the child could be easily aroused; vomiting continued. The pulse at times was



irregular; in a quarter-minute it would be 30, followed by a quarter in which it was 50, and again 30, all this time the child being in stupor or asleep. Then developed ptosis, strabismus, unequal pupils, dysphagia.

In the third week the drowsiness became coma, the countenance expressionless, mask-like. The child emaciated rapidly; the abdomen, which had been normal, became sunken, "boat-shaped;" Cheyne-Stokes respiration well marked; pulse rapid and feeble and intermittent; fontanelle elevated and tense; swallowing impossible. There was no convulsion, no nystagmus, no lung complications. In questioning the mother, the information came out that the physician in the country sat for an hour at a time on several occasions watching the pulse and respiration and general behavior of the infant as it lay in its early stupor. It gives me satisfaction to say that this young physician, a recent graduate of Roosevelt Hospital, made an unreserved diagnosis of tubercular meningitis, and, if our history is correct, he based it on the early symptoms set down at the head of this paper. I would regard as characteristic and reliable for early diagnosis the symptoms shown by this infant in its first week; that is, while in the country. Its prodromal symptoms were irritability, vomiting. Its accompanying symptoms were eye disturbances, inequality of pupils, dilated pupils, ptosis, automatic movements of hands, hydrocephalic cry.

Its diagnostic symptoms were persistence of vomiting, variation of respiration, variation and intermission of pulse-beats, followed by apathy, with its characteristic expressionless countenance.

#### DISCUSSION.

DR. EARLE.—In the first place, I would like to ask Dr. Northrup if a post-mortem examination was made in this case?

DR. NORTHRUP.—I regret to say it was impossible to get an autopsy.

DR. EARLE.—Then I would ask him how he knows it was a case of tubercular meningitis?

DR. NORTHRUP.—There was no autopsy. I do not know that it was a case of tubercular meningitis. But I would ask Dr. Earle whether he is not sure in his own mind, judging

by the symptoms given, that it was a case of tubercular meningitis?

DR. EARLE.—I am not. Tubercular meningitis is one of the most difficult diseases to diagnosticate that occurs in my practice. Several years ago, before I had studied the diseases of children as much as I have since, I wrote a paper in which I said this: "If I were asked the question by a young practitioner, what were the three most difficult diseases among those peculiar to children to diagnosticate and treat, I would say tubercular meningitis, enterocolitis, and laryngeal stenosis." If asked now to answer that question, I might modify my answer somewhat, but I should certainly include as difficult of diagnosis tubercular meningitis.

I desire to express my appreciation of the paper presented by the doctor, and to say that in my judgment the studies he has made will certainly be of aid to us in the diagnosis of this obscure disease, but I shall have to take issue with him on some points. I will name four symptoms on which I would base my opinion in attempting to make a diagnosis of tubercular meningitis, all of which occur earlier in the disease than three of the symptoms mentioned by Dr. Northrup. Of the four symptoms named by the author, he does not claim to observe three of them until the child is well along in the second stage of the disease; that is, irregular pulse, irregular breathing, and apathy. I agree with him that they do occur in the disease under consideration, but not until late. The only symptom which he has given us of any value during the early stage—during the first week possibly—is that of vomiting, and he did not take time to point out the difference between ordinary and cerebral vomiting. If this symptom is worth anything in the diagnosis of tubercular meningitis, or any other form of meningitis, I believe it must be the cerebral form. Every member of this society is familiar with the difference between the ordinary physiological vomiting which is noticed in nearly every well-nourished child, and the *projectile* vomiting, which is almost pathognomonic of some cerebral trouble. This form of vomiting, however, does not enable us to distinguish between simple meningitis and tubercular meningitis. To do that we have to go back and inquire into the history. If I were asked, then, for four early symptoms in tubercular meningitis, I should name, in the first place, a protracted initial stage of slight fever and uneasiness; a desire to go from one person to another; a tendency of irregularity of conduct which sometimes lasts ten days. The child does not know what it wants. One moment it is in the nurse's arms, the next in the mother's, then in the father's, and so on;

a long prodromal period which indicates that something is coming.

2. A history of some hereditary taint or trauma. Combine such a history with the first symptom, and you have something of value.

3. If, in addition to these, you recognize cerebral vomiting, you will have three symptoms which will give you a very fair idea of what is going to happen.

4. Local spasm. To illustrate this point, several years ago I saw a case which had been treated by several physicians for intermittent fever and typhoid. Coming in just at the right time, with two or three weeks' previous history at my command, I was able to correct their error, depending largely upon the local spasm,—the neck being drawn to one side and backward. It is not necessary that all the muscles of a part be affected to show that there is some brain lesion. These four symptoms, then, I regard as of greater value than those named by Dr. Northrup.

DR. ROTCH.—I am still not much enlightened as to the initial symptoms of tubercular meningitis. I do not know how to make the differential diagnosis of this disease during the first year of life, and the paper limits the discussion to early life. During the first year the symptoms are very indefinite. We do not then have, as a rule, typical cases. They differ from the tubercular meningitis of older children, or those of the third, fourth, or fifth year. The case which Dr. Northrup mistook for tubercular meningitis I find no difficulty in recognizing, as Dr. O'Dwyer did, as one of pneumonia. They are not very uncommon. As long as a man may be mistaken in such a case he should hold his diagnosis in abeyance. That is the great secret in making a diagnosis in children,—hold it in abeyance. We know well enough that tubercular meningitis and the cerebral form of pneumonia resemble each other very closely, and some time may be required to make the diagnosis.

As just stated, tubercular meningitis is not typical during the first year of life, and I believe that when you attempt to lay down four symptoms you go far wide of the mark. I think Dr. Earle is perfectly right,—that might have been a case of tubercular meningitis, and it might not. We have no proof. But the four legs on which the diagnosis stands I do believe to be sound legs. Take, for instance, respiration. It was irregular. But we know well enough that during the first months of life the whole nervous system is growing so rapidly that it can be excited to all sorts of curious manifestations. Any man who makes a diagnosis from irregularity of



the pupils in the first year of life makes a very rash diagnosis. You can have cerebral symptoms and no cerebral disease, and why is it? Because in a very large number of cases reflex symptoms come on, due to the fact that the nervous system is growing very rapidly. An irregular pulse and respiration, and other symptoms which would denote cerebral disease in an older child or adult, may arise during the first year of life from an irritable tooth or middle-ear trouble, for the circulation of the middle ear is very closely connected with that of the brain. I have but recently seen a case in which the diagnosis was made of meningitis, the child having convulsions, irregular pupils, irregular pulse, irregular respiration, and the surgeon raised the question of an operation, yet the child had no trouble except disease of the middle ear starting from the root of a tooth.

I acknowledge that an intermittent pulse is a symptom of meningitis in older children, a very strong one. Henoch laid that rule down long ago. But we must accept it with care. I have seen it over and over again, with the symptoms which Dr. Northrup has described, and yet the children got well. It is very doubtful whether we ever cure a case of tubercular meningitis. The patient generally dies within a year or two years.

With regard to cerebral vomiting, I am beginning to be a little sceptical even about that. We are now opening up a new field of medicine in which the reflex nervous symptoms are going to play a great rôle. We are going to find that the baby in the first year can give symptoms of disease in almost any organ of the body, and yet they may be purely reflex. There are cases, though somewhat rare, of purely reflex vomiting, the children vomiting without any nausea whatever. It usually begins in the first year of life; is explosive, simulating so strongly the vomiting of tubercular meningitis that I am not able to distinguish between them. Then I have seen cases in which all the symptoms mentioned by Dr. Northrup were present, yet the condition was one of cerebral thrombosis. So that one cannot diagnosticate tubercular meningitis with the four symptoms mentioned in the paper as a basis,—vomiting, irregular pulse and respiration, and apathy. I also protest against apathy being considered diagnostic of cerebral meningitis. I have seen babies lying side by side in bed, hour after hour and day after day, and have been unable to distinguish between the apathy of cerebral disease and simple atrophy. It may occur in the pneumonia of the young child, either of the apex or base.

We, then, should hold our diagnosis in abeyance, and in

closing I may say that convulsions can be caused in some young children simply by touching the membrum tympani with cotton on a probe, and the same thing may occur in middle-ear disease from the close connection which exists between the ear and brain in young babies through the open squamopetrosal suture.

DR. JACOBI.—The two gentlemen who have already spoken have promised further contributions to this discussion. I should have enjoyed it more if they had said everything they had to say at once, so that I should be perfectly sure I had nothing to add.

I must congratulate Dr. Northrup on the fact that he has written a paper which has elicited so lively a discussion, full of knowledge and sentiment. Still, something may yet be said.

I am also of the opinion which has been expressed by Dr. Rotch, that Dr. Northrup has given symptoms of tubercular meningitis as it appears in children from two to seven years of age. At that age the four symptoms he has spoken of are much more common than in the tubercular meningitis of the very young. I should very probably, with him, if I found those symptoms, with a history of premonitory symptoms extending over a week or two, make a diagnosis of tubercular meningitis, and I believe that in the large majority of cases it would be shown at the post-mortem examination that I was right. But we can not be so perfectly sure. Let me make some remarks on those symptoms.

First, there may be a very slow and irregular pulse, extending over months, and I have seen it extending over years, in children suffering from profound anæmia,—children walking about, even playing about, but having other symptoms of profound anæmia. I have seen that many times, and in former years I felt almost sure the cause was cerebral irritation.

As to vomiting, it is, as Dr. Earle has said, seen in the second stage of tubercular meningitis. There may be reflex vomiting too, but the cerebral vomiting in these cases has this peculiarity, that, like the vomiting of pregnancy, it is elicited at once when the child is raised from the pillow. It is projectile, and is not preceded by nausea. But there are large numbers of cases of tubercular meningitis in which there is very little vomiting, and there are some in which there is no vomiting at all. These cases occur, too, in those of early age. Then there are cases of tubercular meningitis, principally of the superior surface and not of the base. It is only in tubercular meningitis of the base that we have vomit-

ing. By the very absence of vomiting I have sometimes been able to diagnosticate tubercular meningitis of the surface.

There is one symptom which has not been spoken of during the discussion, as far as I remember,—namely, peculiarity of the temperature. This is notable in most cases of just such pronounced type as Dr. Northrup has postulated. Vomiting sets in, perhaps, towards the end of the second week; there is very severe suffering, very serious illness, yet no elevation of the temperature. Those are the cases in which the four symptoms mentioned by Dr. Northrup are likely to develop; that is, cases between the ages of two and seven years. The first stage, that of irritation, is usually not observed by any medical man. It is very seldom that the doctor is called in during the stage of morosity, peevishness, and sleeplessness. Usually, when called, a series of symptoms are reported and observed, and he suspects tubercular meningitis. In such cases one hardly knows whether there was or was not elevation of the temperature in the beginning, but when called he finds either no rise, or only half a degree or a degree (F.) of increase.

While at the older age a large number of cases of tubercular meningitis run the slow and peculiar course just spoken of, yet in a number of cases of the very young that description does not apply at all. The disease does not run a slow course; it does not begin with little or no increase of temperature, but it is high, and it is in this class of cases that the diagnosis is so difficult. Vomiting does not amount to much, but brain symptoms do, particularly delirium. Unilateral symptoms here may mean a great deal in diagnosis, especially in differentiating tubercular meningitis from nephritis. The latter disease is very common at an early age, so common that two or three weeks ago I had no difficulty in making a diagnosis of nephritis, where meningitis had been diagnosticated in a baby of seven weeks. Usually in nephritis the cerebral symptoms are bilateral, while in tubercular meningitis, for good reasons, they are usually unilateral. But even here we may be mistaken, for there are some cases of nephritis in which the cerebral symptoms are unilateral.

I may say, further, that it is often difficult to distinguish tubercular meningitis, first, from simple meningitis; second, from rheumatic meningitis, which I have seen; third, from syphilitic meningitis. And it is now and then very difficult to diagnosticate from otitis. Then there are a number of cases in which there is considerable retraction of the head, moaning, opisthotonos, or acute torticollis, depending either on deep-seated inflammation or simple rheumatic affection of



the mucleles. In some such cases, particularly in which there was intense pain and some vomiting, perhaps convulsions, it has been impossible at once to make the diagnosis until the disease has run its course,—about ten days. Such cases have been reported by Legroux. From all this it is evident the differential diagnosis is very difficult. Besides, we must not forget that meningitis may complicate other diseases. First, there is typhoid fever. Probably all of us have now and then seen cases in which meningitis complicated this disease in the adult and very young child, not to speak of the cases in which the nervous symptoms were such as to make it difficult to say whether there was or was not typhoid fever back of them.

The diagnosis, then, is not really so simple. If I had the four symptoms Dr. Northrup has named, with premonitory symptoms extending over a week or two, I very probably should make the diagnosis which he made, but, as I have already said, that is a series of symptoms seen principally in older children, not in the very young. The cases of surface meningitis are the ones in which apathy and somnolence show themselves earliest. That is quite natural, for the cortex is affected.

DR. WINTERS.—I think the four symptoms enumerated by Dr. Northrup, when properly used, and applied to the child at the proper age, are very valuable and almost positively diagnostic. We are perfectly aware, as Dr. Rotch has said, that all these symptoms may occur during infancy from reflex troubles. Any physician who sees much of tubercular meningitis does not think of making a diagnosis of this affection at his first visit because the symptoms mentioned are present; he has come to be cautious in his diagnosis. He first thinks of reflex causes, and if he finds any reason to suspect their existence, seeks to remove them. If he can exclude these, he next inquires into the history. One would hesitate a long time before making a diagnosis of tubercular meningitis without a history. If he cannot find a tubercular family history, near or remote, he should inquire whether the child has not had some disease which entitles it to auto-infection. With no other apparent reflex or other cause, the symptoms mentioned, taken with a proper history, are almost absolutely diagnostic of tubercular meningitis. Having advanced this far, the cautious physician will do as Dr. Northrup's friend did, sit by the bedside of his patient by the hour, for these symptoms are not very valuable unless watched hour after hour. It was this patient watching which first taught me the importance of these early diagnostic symptoms of tubercular meningitis. It has been my habit for

years, when a child is brought to the dispensary with symptoms pointing to cerebral irritation, to go to the house and study it by the hour when asleep. Following this course, these symptoms have not misled me. Of the symptoms named, it seems to me irregularity of the pulse is most important of all. Watch for it by the hour, and you will surely find it. When the other symptoms intermit, this peculiarity of the pulse still persists, and constitutes the earliest and most important diagnostic symptom.

DR. CAILLÉ.—My views on this subject may be illustrated somewhat as follows: Dr. Northrup has named four symptoms, and the speakers who followed him have named a number of other symptoms, some or all of which are supposed to be characteristic of tubercular meningitis. Now, I look upon the whole question in a totally different light, and I take it that the symptoms under discussion are the usual ones of a group of pathological conditions which we class under the heading of encephalo-meningitis.

The etiology of encephalo-meningitis embraces a variety of causes, among which the following are prominent:

1. The poison of cerebro-spinal meningitis.
2. The poison of septicæmia and pyemia.
3. The extension of a neighboring inflammatory process (ear, nose, panophthalmitis), or intracranial abscesses and tumors.

4. The tubercle bacillus.

The tubercular meningitis occurs rarely as an acute disease. It is usually subacute. It is well known that it will run along three or four weeks, when improvement will take place, the young patient will gain in weight and strength, but subsequently go under from the same disease. I am bold enough to say that in many cases I would be able by studying the symptoms closely to distinguish between reflex troubles resembling encephalo-meningitis and actual cases of this disease. But I know of no symptom which would lead me to make a firm and positive diagnosis of tubercular meningitis, although the element of heredity would be an important guide to formulate a satisfactory conclusion.

DR. FRUITNIGHT.—As germane to the subject and introductory to what I have to say, I will briefly report a case seen last week. It illustrates what Dr. Jacobi has said, that in early infancy tubercular meningitis is likely to run an atypical course. The patient was a female aged eleven months, and the occasion of my being summoned was persistent vomiting. After questioning the mother, I learned that for ten or twelve days the baby had been restless, followed by an apathetic state.

The day I saw her she was vomiting at frequent intervals. The vomiting was projectile. There was some retraction of the occiput, erythema, fugax of face and frontal region was present. There was hereditary taint on the maternal side. The temperature was  $105^{\circ}$  to  $106^{\circ}$ . I saw the child on three successive days, and on the third it died in convulsions. No autopsy was made, but the symptoms taken in connection with the family history led me to make the diagnosis of tubercular meningitis. Like this case, the physician is not apt to see the patient during the early stage; it is during the second stage that he is called, when the symptoms named by Dr. Northrup have been developed. If a history of hereditary taint be co-existent, the diagnosis can then be readily made. At this period in the history of the case, however, the symptoms cannot be considered as early.

DR. ROTCH.—I wish to say that I think we owe a great deal to Dr. Northrup for the admirable way in which he has presented this subject. The manner in which he brought out the cases of entero-colitis was of especial value as showing how this disease may simulate a cerebral affection. There were one or two other points of particular interest. With regard to tubercular meningitis in young babies, it is much more apt to be acute than in older children. Not long ago a prominent physician of Stockholm published cases distinguishing between tubercular meningitis in young and older children. The cases were rather acute in character. Then, as to the history, we cannot depend entirely upon that nowadays, when the tubercle bacillus is coming to be recognized as playing so important a part. There seem to have been some cases in which infection must have come through the nurse, not by nursing, but because she was a tubercular subject.

THE PRESIDENT.—In New York City, tubercular meningitis is not an uncommon disease in the tenement houses and in the asylums, and is of course fatal. Besides this malady, cases of cerebro-spinal fever, or, as it is designated by some, cerebro-spinal meningitis, are also occurring, and at times are more frequent than those of tubercular meningitis. It is often difficult to diagnosticate these two forms of meningitis on their commencement from each other, and from certain other diseases. In diagnosticating them from each other, I have heretofore attached much importance to the fact that tubercular meningitis usually begins gradually preceded by signs of failing health, whereas cerebro-spinal fever begins abruptly, but there are cases in which it is difficult to determine which form of meningitis is present until they have been under observation some days; that is, the history aids in the diagnosis. If death



occur early, we may not be able to determine the kind of meningitis. On the other hand, if the patient recover, we assume that the disease is not tubercular meningitis, but cerebro-spinal fever.

Again, both these forms of meningitis may be mistaken for other acute diseases, and other acute diseases for them. Within a week I have seen a child of about two years with mild cerebro-spinal fever, that was at first supposed by an experienced physician to have rheumatism, on account of pain when it was moved, and recently I have seen a case of very grave adynamic cerebro-spinal fever that the physician in attendance believed in the first days to be typhoid fever. In my opinion the diagnosis of typhoid fever should not be made hastily, and from observing a few symptoms which are thought to be characteristic, but from a deliberate weighing of all the symptoms that are present, and from observing the progress of the case. The presence or absence of headache, intolerance of light, oscillation, inequality or dilatation of the pupils, strabismus, sighing, vomiting, constipation, and the *tâche cérébrale* must be noted, and probably more than one examination will be required before we can pronounce positively as to the nature of the sickness.

DR. NORTHRUP, in closing the discussion, said, It was not the discussion of individual cases which I had hoped would be brought out to-day in response to my question. The individuals in this room represent vast clinical observation. We are now discussing a disease which is common, as all admit; one very difficult of diagnosis; and I did not care to have individual cases brought up so much as to elicit discussion on any four diagnostic points on which the members placed most reliance in diagnosis.

I saw immediately after I had read my paper that it had produced an influence like a red rag, and instantly Professor Earle lowered his head and charged. I knew he would, and I am glad he did. He certainly answered my questions on the four points. Many of those points have been taken up by others also, and I do not desire to intrude upon the time of the meeting in replying to them. I said all I had to say in the paper. It expresses my convictions, and I simply hoped that the report of the meeting would contain a consensus of judgment which would be of some value. I am surprised that Professor Rotch has given a negative answer to the questions. He says the diagnosis cannot be made on four symptoms in the first two years of life. Gowers thinks something of the symptoms I have named, and in his book recently given to the public he tries to explain some of the symptoms on the

basis of the wide origin of the vagus and its irritation, the reflex influence from the presence of food in the stomach, etc. But I will not take up your time in going over these points.

A word or two with regard to the four points I have named. I do not wish to change them, but to emphasize what Dr. Winters has said. For instance, the importance of watching the early stage. A child begins to vomit and tends to sleep a good deal. Now, vomiting with drowsiness is very common among children. Yet on close observation, and taken in connection with the other symptoms, it becomes very significant. The point made by Dr. Jacobi, with regard to low temperature, I do not undervalue, but I was unable to get it into my list of four. In the histories of my cases I purposely put in the temperature, and in one, to show its course, stated that on one day it rose to  $105^{\circ}$ , but fell again to  $103^{\circ}$  F. That, of course, confused the diagnosis, but it was my duty to give it as the case came to me, omitting none of the facts.

(To be continued.)

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(Continued from page 840.)

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THE MANAGEMENT OF HUMAN BREAST-MILK  
IN CASES OF DIFFICULT INFANTILE DI-  
GESTION.

BY T. M. ROTCH, M.D.,

Boston.

INSTANCES have continually been brought to my notice where infants have either been allowed to continue with their mothers' milk when they were not thriving on it, simply because it *was* mother's milk, and, on the other hand, have been weaned from their mothers for what would evidently be insufficient reason had the case been thoroughly understood. In both instances a proper knowledge of what can be done with breast-milk—that is, with the management of its different constituents, increasing or decreasing their relative proportions—would have been of benefit to both mother and child, and in the latter case at times was simply a question of mortality. This lack of knowledge, or, I should say, lack of adapting



the small degree of knowledge which we possess of this branch of medicine, is, to say the least, reprehensible, and in other branches of our art, which are more intelligently and carefully studied, would be deemed inexcusable. Physicians are continually stating to their patients that human breast-milk is the best food for infants, and yet continually exhibiting their ignorance concerning, or neglecting to follow, the very principles which make their statements true. First, then, we, as practical physicians, should at once understand, agree to, and state that when we speak of the superiority of breast-milk as a food we mean good average breast-milk, and for the average infant. It would seem that, considering how important it is to start young human beings well in life, and how frequently this start is handicapped by immediate overtaxation of their digestive function, a brief statement of what is known concerning human breast-feeding would not be out of place at this meeting.

I hope, also, that the results of my own individual work in this direction, during the past two years, may not be uninteresting to you. Remember that we are working clinically in the nursery; that our knowledge of breast-feeding is not exact, and hence our results are liable to be failures. We are groping, as it were, after the truth in our investigations of breast-feeding. Our knowledge of it and our accuracy with it does not compare with that of artificial feeding. Hence it is more of an unknown ground; hence interesting; and hence most worthy of the attention and discussion of this society.

The breasts of all mammals that suckle their young, are elaborators, producers; they are not storehouses for preserving sustenance for the infant until it is needed; they are beautifully-constructed mills, turning out, when demand is made for it, a product which has been directly moulded within their walls, from material which has been brought to it and through its portals from various parts of the economy; a compound racemose gland, lined with glandular epithelium, which acts as so much delicate machinery to form sugar and fat and albuminoids, and these are mixed with water and salts from the blood. The epithelial cells are so finely organized, so sensi-

tive with their minute nerve connections, that changes of atmosphere, changes in food, the emotions, fatigue, sickness, the catamenia, pregnancy, and many influences, in fact, throw their mechanism out of gear most readily, and change essentially the proportions of their finished product. Then, again, this delicate mechanism adapts itself as to the bulk of its product, elaborating a smaller or greater supply according to the age and again to the size of the consumer. The same breast will either supply the proper amount for the average infant of a certain age, or the greater amount for the same age but greater gastric capacity of the infant above the average development for its age; or, again, the greater amount required for both these infants when they are some months older. Again, this machinery is regulated as to the time which it requires at different ages of the consumer to produce the average qualitative food, a shorter interval of feeding being needed for the younger and a longer interval for the older infant, so that a neglect, on the part of the mother, to adhere to the proper intervals for using the machinery results in decided qualitative changes. Thus a prolonged interval lessens the solid constituents in their proportion to the water, while a shortened interval, by exciting the epithelial cells to frequent work, overstimulates them, with the result of increasing the solids in their proportion to the water. In fact, too long intervals produce a too dilute product, while too short intervals produce a too concentrated product. We know that there are a variety of salts in the finished product of the mammary gland, and we infer that these salts have a certain definite proportion to each other, from our knowledge of the product of the cow's mammary gland; as yet, however, the chemist has failed to impress us with the belief that we have a sufficiently exact knowledge of the proportions which the different constituents of the total salts hold to each other, for us to attempt to make any practical deductions concerning them. We therefore speak of them as a whole under the title of ash. The analysis, also, of large numbers of breast-milks, at different periods of lactation, shows us that not only the constituents vary from month to month, and even from day to day, but that this variation takes place to as great a degree in the early as in a later

period of lactation, so that we are not warranted in assuming that the milk grows stronger as its age increases. The mammary gland acts both as a secretory and an excretory organ, so that it cannot be classed as a metabolic tissue, in the limited meaning we now attach to these words.

Yet the metabolic phenomena,\* giving rise to the secretion of milk, are so marked and distinct, and have so many analogies with the metabolism which we meet with in adipose tissue, that we must look upon it chiefly as a secretory organ, within, however, certain limits, for we, of course, know that, at times, foreign elements may be excreted from the gland, to the detriment of the consumer. This at once opens up the interesting question, When is the mammary gland most likely to have what we might call its normal secretory function interfered with and assume temporarily the function of an excretory organ? This apparently takes place both before the mammary gland has attained its equipoise, so to speak, as during the colostrum period, and later, when any of the above-spoken-of influences occur, affecting the mother's general condition, such as sickness, emotion, etc. In these latter instances we find the milk returning to the colostrum period,—that is, we assume that the chemistry of that early period of lactation, which essentially represents a condition of lack of equipoise, is a condition of double function, partly secretory, partly excretory. The greater the excretory function of the gland becomes at any time in proportion to the secretory, the more abnormal will be the finished product, while the nearer the gland approaches to a purely secretory organ, the more perfect and normal the product. The mechanism of the mammary gland, therefore, is in its most perfect condition after the colostrum period has ceased, and when the general organism, both physical and mental, is in a state of rest, by rest meaning freedom from causes detrimental to a perfect metabolism. The chemistry of this equipoise and lack of equipoise of the mammary product appears to be closely connected with the albuminoid element. This element is known to be a compound one and decidedly complex, but, for purposes of illus-

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\* Forster's "Physiology."



tration, we can safely say that the word albuminoids is a general term, which includes casein and albumen, also that these factors of the complete whole vary in their proportions to each other, according as the mammary function is, or is not, in a state of equipoise. In the colostrum period also, and probably in its analogous periods of sickness, emotion, etc., the albumen is in excess proportionately to the casein, while as the equipoise of the function becomes more complete, the casein is increased proportionately to the albumen. Probably at the end of lactation, as in the beginning, we shall find this same condition of richness of albumen and deficiency of casein. In the beginning, then, of lactation, during lactation, when normal metabolism is interfered with, and as lactation draws to a close, we have analogous conditions, in which the mammary gland, instead of being a normal secretory organ, becomes abnormal and a more or less excretory organ. During these periods we should be careful not only to avoid giving drugs to the mother which might be eliminated by the milk, but should also closely watch the infant for signs of digestive disturbance, which may be at once corrected by withdrawing for a time the mother's breast.

DIAGRAM I.—HUMAN BREAST-MILK.

	Normal Average.	Rotch's Working Basis.
Fat.....	4.	3-4.
Albuminoids.....	1-2.	1-3.
Sugar.....	7.	6-7.
Ash.....	0.2	0.1-0.2
<hr/>		
Total solids.....	12-13	10-14
Water.....	88-87	90-86
<hr/>		
	100-100	100-100

I have given the figures representing the average breast-milk according to large numbers of analyses, made by the latest and most improved methods, as recommended by the most noted milk analysts of the world,—that is, they represent the average figures.

Beside these figures I have placed the figures usually returned to me in cases where the infants have thriven.

The methods of analysis were the same in mine as in the average cases, and represent the work of experts trained for this especial chemical research. (As, I suppose, this society consists more purely of clinical investigators than chemists, I take it for granted that my illustrative figures will be accepted as correct, and that the question of methods of analysis need not be further spoken of.) Strange as it may seem, the unquestioned value of the milk analysis in clinical medicine is, as a rule, overlooked.

Ten or twenty dollars spent for three or four analyses will, in a very large number of cases of difficult infantile digestion, render an obscure case clear, relieve the mind of the physician, and enable him to at once adopt the proper line of treatment.

The milk analysis simply shows *what* the infant is taking into its stomach, and which part of the food is producing the unfavorable symptoms.

The treatment is simply knowing the error in one or more constituents of the food, to change them either to the normal average, or below it, until the digestive functions have recovered their equilibrium. In order to obtain a fairly correct and at best only proximate knowledge of what the especial infant is taking into its stomach, when nursed at regular intervals, according to its age, the proper method of obtaining the specimen to be analyzed should be carefully attended to.

From what has just been said concerning the influence of short or long intervals and the proportions of the different solids at the beginning (fore-milk) and end (strippings) of the nursing, we at once see that the milk for analysis should either be the total amount which the breast contains, or it should be taken in the middle of a nursing. Thus, if it is found that the infant takes twenty minutes to empty the breast, we should allow it to nurse five or six minutes. We should then take our specimen for analysis, calculating as well as we can from the total amount which the age and weight of the infant indicates as being in the breast, and taking a larger or smaller amount so as to not get the nursing of the last five or six minutes, namely the strippings.

DIAGRAM II.—HUMAN BREAST-MILK.

	"Strippings." (Two hours interval.)	"Fore-Milk." (Twelve hours interval.)
Total solids.....	15.32	10.14
Water.....	84.68 •	89.86
	<hr/> 100.00	<hr/> 100.00

This diagram represents the importance of these rules. The chemist needs from one to two ounces of milk, preferably the latter, for his analysis.

I have had a large number of breasts, in private practice especially, but also in the hospitals, pumped for analysis, and have found this simple apparatus—the Altina breast-pump, which I now show you—as successful and as free from harm as any. The objection made by some physicians, especially in the hospitals, to pumping the breasts is that they fear mammary abscess. I have never seen this result from the pump in private practice, and should judge that, with careful and gentle manipulation, it must be rare. As my allotted time will not permit me to cite numerous cases of breast-milk management, I shall simply present to you diagrams which will each represent a particular class of cases, which have appeared to me to be of interest and importance. First, however, what do we know of those causes which change the proportion of the solids to the water in milk, which can be practically made use of in our endeavor to make these changes, when we attempt to manage the milk? A sedentary life, with abundance of rich mixed food (provided the woman has a strong healthy digestion), appears to increase the total solids and decrease the water. This increase is almost always in the fat and albuminoids rather than in the sugar and ash; in fact, the marked variations in human breast-milk are almost always shown in the fat and albuminoids. Hence our attention must almost invariably be directed to correcting the fats and albuminoids. This is fortunate, as we know of no especial treatment, except on very general principles, by which we can alter the proportion of sugar or salts to the other constituents; in managing human breast-milk, then, we treat almost universally the fat and the albuminoids. A meat or rather nitrogenous diet in the woman



increases the fat in her milk. Our knowledge of physiology also indicates that much fat eaten by the woman tends rather to lessen the fat in her milk. Hence, to increase the proportion of fat in a woman's milk, give much meat and only a moderate amount of fat. The albuminoids are more difficult to deal with; they have a tendency to increase both in very poor, very bad, and very rich milk. The problem with them which we have to solve is almost always how to decrease them, no matter what the milk is. Our knowledge, unfortunately, concerning a sure means of reducing the albuminoids is very limited. Practically, however, I have found that where the woman is in good health, it is physical exercise which we must insist on, preferably walking in the open air, and within the limits of fatigue. An average of from one to two miles twice daily I have found to be about what the average healthy woman in New England needs to reduce her albuminoid percentage.

We can now discuss these illustrative diagrams intelligently, and I ask for free criticism of this important and complex subject, for I am myself, with all humility, simply groping after the truth, and I have learned much from my failures as well as from my successes. It is the successes, however, which must encourage us to go on seeking after the truth.

#### DIAGRAM III.

*Represents typical analyses of normal, poor, overrich, and bad human breast-milk.*

	Normal. (Healthy life as to exercise and food.)	Poor Milk. (Starvation.)	Overrich Milk. (Rich feeding; lack of exer- cise.)	Bad Milk. (Pregnancy, disease, etc.)
Fat .....	4.	1.50	5.10	0.80
Albuminoids .....	1-2.	2.40	3.50	4.50
Sugar .....	7.	4.00	7.50	5.00
Ash .....	0.2	0.09	0.25	0.09
Total solids .....	12-13	7.99	16.35	10.39
Water .....	88-87	92.01	83.65	89.61
	100-100	100.00	100.00	100.00

DIAGRAM IV. (HUMAN BREAST-MILK)

*Shows the influence of a luxurious life on a poorly-fed but healthy wet-nurse.*

	Normal.	Two days before change of food.	Rich food and but little ex- ercise for a month.	Food and exercise regulated.
Fat.....	4.	0.72	5.44	5.50
Albuminoids.....	1-2.	2.53	4.61	2.90
Sugar.....	7.	6.75	6.25	6.60
Ash.....	0.2	0.22	0.20	0.14
Total solids .....	12-13	10.22	16.50	15.14
Water .....	88-87	89.78	83.50	84.86
	100-100	100.00	100.00	100.00

DIAGRAM V.

*Shows the effect of the catamenia on human breast-milk.*

	Normal.	Catamenia. Second day.	Seven days after catamenia.	Forty days after catamenia.
Fat.....	4.	1.37	2.02	2.74
Albuminoids..	1-2.	2.78	2.12	0.98
Sugar.....	7.	6.10	6.55	6.35
Ash.....	0.2	0.15	0.15	0.14
Total solids ...	12-13	10.40	10.84	10.21
Water.....	88-87	89.60	89.16	89.79
	100-100	100.00	100.00	100.00

DIAGRAM VI. (HUMAN BREAST-MILK)

*Shows a bad milk, and one which was impossible to manage on account of the continual recurrence of the same cause, uncontrolled emotions.*

	Normal.	Emotions causing disturbance in infant's digestion.
Fat.....	4.	0.62
Albuminoids .....	1-2.	4.21
Sugar.....	7.	5.80
Ash.....	0.2	0.20
Total solids .....	12-13	10.83
Water .....	88-87	89.17
	100-100	100.00

DIAGRAM VII. (HUMAN BREAST-MILK)

*Shows a milk possible to manage because the mother, though excitable, was able and willing to control her emotions.*

	Normal.	Baby doing badly, colic, etc. Mother before treatment.	Baby doing well. Mother after treatment.	Wet-nurse provided but not used.
Fat.....	4.	1.62	3.20	3.04
Albuminoids	1-2.	3.54	2.52	2.32
Sugar .....	7.	6.10	6.40	6.60
Ash.....	0.2	0.17	0.18	0.12
<hr/>				
Total solids...	12-13	11.43	12.30	12.08
Water.....	88-87	88.57	87.70	87.92
<hr/>				
	100-100	100.00	100.00	100.00

In the above case the mother was very nervous, and wished to nurse her baby, but thought that she could not, as she had been discouraged by her nurse and physician.

She was then told that she could nurse in a week, if, in the mean time, she took proper food and exercise and withdrew the baby from the breast. This she did, and had her breasts regularly pumped with the above result.

DIAGRAM VIII. (HUMAN BREAST-MILK)

*Shows how a milk can be managed while the nursing is continued.*

	Normal.	Baby two weeks old with serious general nervous symptoms and pain. Mother eating much meat and taking no exercise.	Mother walking and eating less meat. Baby entirely well.	Baby four months old with pain and diarrhoea. Mother not walking so much.	Baby doing well. Mother walking two miles daily.
Fat.....	4.	3.44	2.09	3.98	3.19
Albuminoids .....	1-2.	3.96	1.38	2.22	1.78
Sugar.....	7.	5.60	6.70	7.00	5.60
Ash.....	0.2	0.20	0.15	0.19	0.16
<hr/>					
Total solids.....	12-13	13.20	10.32	13.39	10.73
Water.....	88-87	86.80	89.68	86.61	89.27
<hr/>					
	100-100	100.00	100.00	100.00	100.00



As seen above, the baby did not do well until the mother began to exercise, and at four months was again affected by apparently the high percentage of albuminoids. The baby was considerably under the weight corresponding to that of the average baby of four months. It was found to nurse twenty-five minutes at a time, and by calculation, from weighing before and after nursing, it was found to take from twenty to thirty drachms. This amount being larger than the probable size of its stomach demanded, the time of the nursing was reduced to twenty minutes, and five drachms of sterilized water were given in the middle of the nursing, thus changing the percentages in the milk to the figures which are represented in the last column. This calculation is on the basis of twenty-five drachms to each nursing.

So long as this method of feeding was adhered to the baby did well. It was evidently a case where the baby could not digest over two per cent. of albuminoids.

DIAGRAM IX. (HUMAN BREAST-MILK)

*Shows a milk in which the albuminoids, which were disturbing the infant, could not be reduced until the mother was made to walk comfortably and thus without fatigue.*

	Normal.	Infant with colic and vomiting. Mother taking no exercise and very rich food.	Infant as before. Mother walking two miles daily, but having blisters from French shoes.	Infant doing well. Mother walking two miles. Easy shoes, no blisters.
Fat .....	4.	3.05	0.65	3.34
Albuminoids	1-2.	3.89	3.82	2.61
Sugar .....	7.	6.10	5.25	6.30
Ash .....	0.2	0.16	0.18	0.16
<hr/>				
Total solids..	12-13	13.20	9.90	12.41
Water.....	88-87	86.80	90.10	87.59
<hr/>				
	100-100	100.00	100.00	100.00

## DIAGRAM X. (HUMAN BREAST-MILK)

*Shows the value of retaining the breast-milk by managing even an unpromising case.*

	Normal.	Infant with colic and failing. Mother no exercise, nursing irregularly, irregular and improper sweet food. Nervous, worried condition.	Infant put on bottle. Breasts pumped every four hours, moderate exercise, one mile. Full regular diet, tranquil.	Exercise increased to two miles. Small amount of meat.	Eating much meat. Exercise the same.
Fat .....	4.	0.34	3.24	2.79	4.84
Albuminoids	1-2.	3.61	3.95	3.66	3.42
Sugar .....	7.	5.40	5.45	5.05	6.00
Ash .....	0.2	0.18	0.16	0.20	0 17
Total solids...	12-13	9.53	12.80	11.70	14.43
Water.....	88-87	90.47	87.20	88.30	85.57
	100-100	100.00	100.00	100.00	100.00

The above represents a bad milk from the failure of the healthy mother to conform to the rules of lactation. This bad milk represented in the second column had to be made into a rich milk by regular feeding before any attempt could be made to alter the constituents. The albuminoids were then reduced somewhat by exercise, and after the breasts had been pumped for two weeks, the analysis showed the percentages as represented in the last column. The milk was then diluted with sterilized water by the same method as was explained in Diagram VIII., and the baby was put to the breast and did well; in fact, was carried through an attack of retro-pharyngeal abscess with this breast-milk.

## DIAGRAM XI. (HUMAN BREAST-MILK)

*Shows that even for a long interval the breasts may be pumped and the result be a successful nursing.*

	Normal.	Baby showing nervous symptoms and much uric acid. Mother no exercise, much rich food.	Baby showing no uric acid and thriving. Mother walking two miles and not eating much meat.
Fat .....	4.	5.71	2.67
Albuminoids.....	1-2.	4.29	3.18
Sugar .....	7.	4.00	6.60
Ash .....	0.2	0.19	0.17
Total solids.....	12-13	14.19	12.62
Water.....	88-87	85.81	87.38
	100-100	100.00	100.00

In this case the baby was withdrawn from the breast temporarily, and the breasts pumped twenty-seven days.

When the analysis presented the figures seen in the last column, the milk was treated as in Diagram VIII., and the baby put back to the breast.

#### DISCUSSION.

DR. JACOBI.—In reply to your invitation to discuss this paper, Mr. President, I may say there seems to be little room for discussion. These figures speak for themselves. It is a satisfaction to me that Dr. Rotch has had the interest which he has shown for years in the study of breast-milk and artificial feeding, and that he has made his studies so exact. It may be known to some of those who have read my contributions to this subject the past twenty or thirty years that I have always insisted, inasmuch as the albuminates are increased when there is anything wrong with the mother's milk, upon mixing with it some additional liquid. Seldom have I used water, sometimes sugared water, but usually farinaceous decoctions. My satisfaction is that the author has taken the trouble and has found the time to work up the subject so exactly, and that the facts which so accurate an observer has collected have confirmed my own position.

DR. HOLT.—It has long seemed to me that physicians were accustomed to order the mother to stop nursing her child sometimes for very slight reasons. Nursing is so important that in every case the subject should be thoroughly investigated before ordering a change. The question of the mother's ability to nurse the child is sometimes the question of the child's life itself. Dr. Rotch's work is in the right direction, and I am very glad the subject has been brought before this meeting. It has long seemed to me that much could be done in an accurate and careful way which has not heretofore been attempted, and the results which Dr. Rotch has obtained ought to stimulate us all to more careful study in this direction. Instead of saying to a mother in an arbitrary way, "It is impossible for you to nurse your baby; get a wet-nurse, or give it the bottle," we should study the case as carefully as we would any other difficult problem in medicine before reaching a conclusion.

DR. FRUITNIGHT.—It seems to me that this paper is a very realistic protest against the usual way physicians have of condemning mother's milk. We know it to be the custom of many physicians to take a little of the mother's milk in a glass, and in a perfunctory manner look at it, observe that it is blue,



or pale, looks thin and watery, and immediately order the mother to discontinue nursing. I think the position taken by Dr. Rotch—that the practitioner should analyze the milk before giving such advice—is the right one.

DR. BLACKADER.—I have nothing to say further than to express the satisfaction which the paper has given me. Having already been acquainted with the author's views, I applied them in several cases this summer, cases in which I had every reason to believe the albuminates were increased, and in which, under my directions, the children thrived on the mother's milk, notwithstanding other physicians had ordered a change. Dr. Rotch has stated that a high diet is apt to increase the albuminates. It has seemed to me that in dispensary cases the taking of a large quantity of tea introduces a nervous element and has a similar result. I often find mothers taking six or seven cups of tea, usually green tea of the poorer quality, during the day, and on prohibiting it the babies begin to thrive.

DR. ROTCH.—I thank the gentlemen for the courteous remarks which they have made. They will have many failures in applying these more exact methods. I have spoken of the successes. We cannot expect simply by following out these rules to be able to manage the milk in every case. But I do think it is worth while to continue the study. There seems to be a prevailing opinion that when human breast-milk contains more than one per cent. of albuminoids the child cannot thrive. This is not so; there is no fixed rule. Infants sometimes thrive when the albuminoids reach three per cent. Each case constitutes a rule unto itself.

SUMMER DIARRHŒA IN INFANTS: BEING AN  
ANALYSIS OF THE CASES TREATED AT  
THE SEA-SHORE HOME DURING THE SUM-  
MERS OF 1887, 1888, AND 1889.

BY CHARLES W. TOWNSEND, M.D.,

Boston.

THERE are no diseases occurring among infants whose treatment is more perplexing than that of the diarrhoeal diseases which every summer play such havoc among the residents of large cities. The Sea-Shore Home at Winthrop receives from Boston during the summer months infants suffering from these diseases, and my endeavor in this paper will be to analyze the cases of the last three years, in order to arrive, if possible, at some conclusions as to methods of treatment. Although the number of cases is not large, my excuse for offering this report to your consideration is the fact that careful records were kept of each case, including daily record of weight, and thus my conclusions are obtained as much as possible from definite data, and not from general impressions which are apt to be so misleading. For these records I am greatly indebted to my house-officers, Dr. A. C. Stannard, Dr. A. S. Thayer, and Dr. E. J. Tilton, to whom I wish to express my thanks, and also to the sisters of St. Margaret, who have so intelligently conducted the nursing.

The diarrhoeal diseases I have, for the sake of convenience, divided into three forms, which I shall define rather arbitrarily: first, cholera infantum, meaning by that an acute, probably specific, and general disease characterized by profuse watery purging and vomiting, and a high temperature, running a rapid course, and ending in death or recovery in from twenty-four to seventy-two hours. Second, gastro-intestinal catarrh, a disease characterized by vomiting and diarrhoea, the vomiting and stools often containing mucus. The temperature is either normal or slightly elevated, and the disease lasts from a few

days to months. Third, intestinal catarrh, in which the intestines are alone affected.

Let me here enter my protest against the loose way in which the term cholera infantum is used, even by physicians who know better, and let them not refer to intestinal catarrhs that have lasted for weeks as cases of this disease.

During the three summers there were 236 cases of diarrhoeal diseases at the Home, of which, 11, or four and a half per cent., were classed under the head of cholera infantum; 77, or thirty-two and a half per cent., were cases of gastro-intestinal catarrh; and 148, or sixty-two per cent., were cases of intestinal catarrh.

*Cholera infantum* (11 cases).—Of these, 7, or sixty-four per cent., died. Four died within eight hours of entrance, being admitted moribund. The duration, both in the fatal and non-fatal cases, was fifty-one hours, omitting one case, where active symptoms ceased on the second day, but where death ensued on the ninth day from gastro-intestinal catarrh and collapse. The temperature was recorded in five cases, reaching in all 105° F. or over, in one case 107° F.

The four cases that recovered began after an interval of one to four days to rapidly gain in weight; the average daily gain for five and one-third days for all these cases was found to be as much as ninety grammes (three ounces). This would serve to emphasize the fact that cholera infantum is a disease without appreciable local lesions; and although it may be followed by gastro-intestinal catarrh, which may prove fatal (as in the case noted above), it may, on the other hand, be promptly and entirely recovered from.

All of the fatal cases and two of those who recovered were on the bottle; the two others who recovered were partly nursed and partly fed artificially.

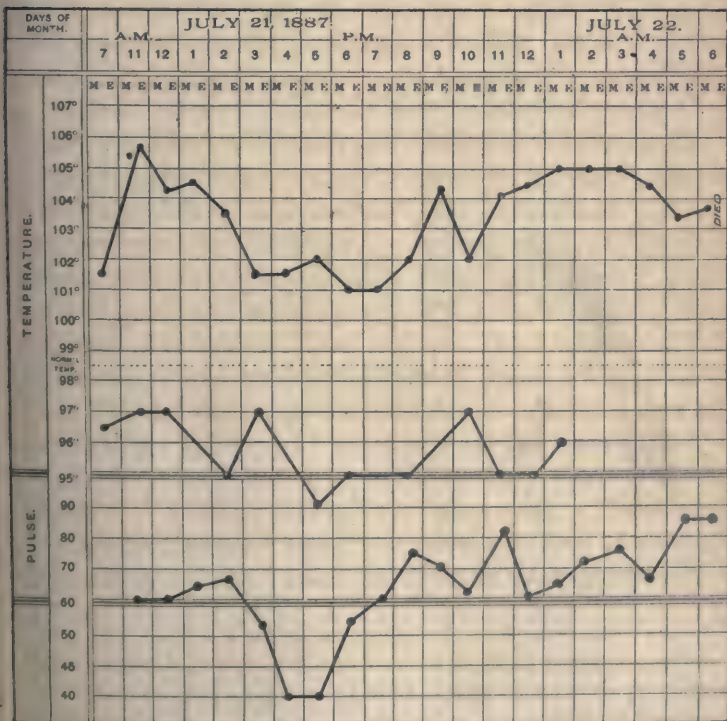
The average age of the cases was eight months; the extremes being three and twelve months for those that recovered, and one and a half and twenty months for those that died.

The treatment was essentially the same in all the cases, namely, brandy by the mouth in large and frequent doses, and occasionally subcutaneously; the application of warmth by means of hot-water bottles to the extremities; of cold to



the head, where this was indicated, and the administration of water in large quantities, to make up for the drain on the blood caused by the watery discharges. White of egg and beef-juice were also given as soon as they could be borne.

During the first summer, two cases of cholera infantum began at the Home, due unquestionably to the fact that the food was not sterilized. In the last two years the food has been sterilized, and since then no case has arisen at the Home. These two cases are very instructive. Both children had entirely recovered from intestinal catarrh, and were gaining weight on a diet of milk and barley-water; in both the attack was suddenly ushered in by profuse watery purging and vomiting, both went into a rapid collapse, had convulsions, and died in twenty-four hours. The hourly temperature chart of the child, aged twenty months, is here given.



*Gastro-intestinal catarrh* (77 cases)—*Intestinal catarrh* (148 cases).—Of the former, 37 were discharged well, 20 relieved, 14 not relieved, and 6 died. Of the latter, 121 were discharged well, 23 relieved, 4 not relieved, none died.

*Observations on temperature.*—In 79 cases temperature charts were kept, and out of 37 cases of gastro-intestinal catarrh, the temperature remained normal in 14; in 4 the temperature rose once or twice to 100° F.; in 7 it ranged from 99° to 100° for several days; and in 6 it occasionally went as high as 103°, returning to 99° or 98°.

Of 42 cases of intestinal-catarrh, the temperature remained normal in 28 cases; in 5 it occasionally rose to 100°; in 7 it continued for two or three days between 99° and 100°; and in 2 it rose once from normal to 103°. There was, in fact, no regularity in the temperature charts, as in cases of cholera infantum, and it was of but little value in prognosis. Although, as a rule, the sicker the case the more apt was the temperature to be occasionally elevated, still some of the sickest cases had normal temperature. It does not seem possible, therefore, to distinguish a "simple diarrhœa" from intestinal catarrh by absence of an elevation of the temperature.

With reference to the important subject of treatment, I have carefully analyzed the cases, taking into consideration the number and character of the dejections and vomitings, and the daily weight of the patients. An analysis of this sort is very difficult, owing to the fact that the cases differ so, no two being exactly alike; there is also great danger of falling into the *post hoc propter hoc* fallacy. It would, for example, be useless to compare the results in those given drugs and in those without such treatment, for the latter were generally the mild cases.

All the cases had the advantage of the change of air from the hot crowded city to the country; and the good effects of this alone were in many cases very marked, resulting in a speedy recovery in some of the very mild cases,\* and in a marked improvement in many of the severe cases. But it is evident that

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\* The Sea-Shore Home is situated in the middle of the peninsula of Winthrop, about a mile distant from the ocean on one side and Boston harbor on the other.

a change in the air alone is not sufficient for the cure of any but the most transitory cases.

A change of diet was found to be the most important of all considerations, for in all some defect in the quality or quantity of the food given previous to entrance was found, the most marked defect being that the food was generally far from fresh or sterile, as was easily discovered by an examination of the bottles brought with the patients.

**DIET.**—During the second and third summers all the bottle-foods were systematically sterilized by steam, and the benefit obtained, as seen in the more favorable progress of the cases, was evident.

*Breast-milk.*—In 35 cases the infants were partly or wholly breast-fed. In 6 cases the breast-milk did not agree, in 29 cases it did agree, although in many of these the milk was evidently bad at first, as shown by the character of the stools and by the loss of weight in the infants; but later, as the mothers improved, with the change of air and diet and the freedom from household cares, the infants improved correspondingly.

*Milk and lime-water*, in varying proportions, were used in 39 cases. In 14 of these the mixture did not agree; in 25 improvement occurred during its use.

*Milk and barley-water*, in varying proportions, were used in 66 cases. In 17 it did not agree; in 49 improvement occurred during its use. Many of these were mild cases, and it was generally given to infants over a year old, where it was evident that the disease was of a transitory nature. Whether the same proportions of milk and plain water would not have done as well I do not know.

*Peptonized milk* was given in 11 cases, all rather severe, in 6 of which no improvement followed; in 5 there was improvement.

*Modified milk mixture.*—This, during the first summer, was the mixture of Dr. A. V. Meigs, consisting of cream (fifteen per cent.), 2 parts; milk, 1 part; lime-water, 2 parts; sugar-water (seventeen and three-quarters drachms of milk-sugar to the pint), 3 parts. After this it was given in the form recommended by Dr. Rotch, in the proportion of cream (fifteen per



cent.), 4 parts; milk, 2 parts; water, 9 parts; lime-water, 1 part; sugar of milk,  $6\frac{3}{4}$  drachms to the pint of mixture. This latter mixture was variously modified to suit individual cases, by the reduction of the fat or of both fat and albuminoids. The mixture, in one form or other, was used in 75 cases, and, as a rule, in more severe cases than those in which milk and barley-water were given; 50 of these did well; 25 did not do well; but it was noticeable that the proportion of those with whom the mixture agreed increased in the last two years, owing partly to the fact that the food was sterilized and partly because the proportions of the food were differently arranged. I am, therefore, more and more satisfied with the use of this mixture, and can add that my results in private practice have been even more satisfactory. This difference is largely owing to the fact that, among the poorer class of patients, such as are taken to the Sea-Shore Home, many are to be found whose constitutions are so feeble that even with the best treatment they succumb to disease.

The only other forms of dietetic preparations used at the Home were beef-juice and white of egg in sterilized water. These were particularly useful in cases where vomiting was a prominent symptom; of 36 cases in which beef-juice was used, in 27 it acted well, in 9 it did not. The white-of-egg mixture was used in 23 cases, with good results in 16; without them in 7. Infants with severe gastro-intestinal catarrh were, as a rule, given beef-juice or that alternate with white-of-egg and water for twenty-four or forty-eight hours. At the end of this time the modified milk mixture was cautiously given in place of a few feedings of the beef-juice, was gradually increased, and the beef-juice diminished, until the latter was entirely replaced by the milk mixture. In a few cases the complete starvation plan was tried, of giving the baby water only for the first twenty-four hours, but it was not as successful as the above method, besides causing considerable anxiety and complaint on the part of the mothers.

Brandy was used in a large number of the cases, including all the severe ones.

**DRUGS.**—Eighty-seven cases were treated without drugs, reliance being placed on diet, the change of air, and good hy-

gienic measures; 76 of these cases did well, 11 did not improve. The mild cases are, as a rule, included in this list, also some of the serious cases. Treatment by drugs was limited, with a few exceptions, to bismuth, salicylate of soda, and lactic acid, belonging to the class of antiseptics, and these were, I think, given a thorough trial.

*Bismuth* was used in 42 cases. In 25 cases no improvement occurred during its use, as shown by the character of the stools or by the weight of the infant; in some of these its administration was objected to by the infant, with the result of causing vomiting. In 17 cases improvement occurred during its use. In either case, it is to be remembered that dietetic and hygienic measures were also employed.

*Salicylate of soda* was used in 26 cases, being given in water in doses of two grains every two hours to an infant of a year. In 14 cases there was no improvement; in 12 cases improvement occurred during its use.

*Lactic acid* was given in 12 cases, in doses of a drachm of the two-per-cent. solution, at intervals varying from a quarter-hour to two hours. No effect was noticed in 6 of these cases; in 5 improvement occurred under its use.

*Resorcin* was given in 4 cases, in 3 without effect, in 1 improvement occurred.

As the cases differed so in degree of severity and in duration before entrance, it is impossible to draw exact conclusions from these figures; but, taking into consideration the number of cases that did well without drugs, I am inclined to be rather sceptical as to the value of these antiseptics in the treatment of summer diarrhoea. Their use in my hands has certainly not been followed by the brilliant results reported by some. This difference can perhaps be explained by the fact that my cases remained constantly under observation, and were not of the uncertain out-patient class where favorable results are too often wrongly inferred from the non-reappearance of the patient and partly from the fact that zeal for a theory of intestinal antiseptics may have warped these reported judgments in deciding on the benefit obtained.

On theoretical grounds, if I am not mistaken, intestinal antiseptics by means of the drugs used at the present time is

impossible without danger to life, and with the late views on the function of certain intestinal bacteria it would, even if possible, be inadvisable.

*Lavage* of the large intestine with tepid water was used in 13 cases. In 10 of these, improvement was certainly marked, in 1 there was temporary improvement only, and in 2 no improvement took place. The results in these few cases encourage me to continue this treatment, although, as the small intestine is not reached by the washing, it does not seem to me that we should expect too much from this treatment alone. Lavage of the stomach I have not employed.

Relapses were not uncommon, and I have often wondered whether the patients might not be reinfected or their recovery delayed by the presence of so many others suffering from diarrhoeal diseases. Infection through the food was prevented by the process of sterilization. There has been a steady improvement in the three years in the quarters given to the patients as regards space and ventilation, and with this an improvement in the progress of the cases.

*Observations on weight.*—A daily gain in weight is of course a most favorable indication. Some of the infants were discharged well in the course of one or two weeks, gaining in weight daily, yet weighing less than on entrance owing to the large initial loss before the diarrhoea was cured. The subsequent gain in weight was generally irregular, being often interrupted for a day or two. In a few cases there would be no gain in weight, notwithstanding the cure of the diarrhoea. Of 160 cases, there occurred a gain in weight over the lowest point reached in 105; 55 lost weight, and did not regain any. The average daily gain among the former cases was 38.8 grammes; the largest average gain for any one patient being 134 grammes (four and a half ounces) daily for eight days. The average daily loss in these 105 cases, until the lowest point was reached, was 34.8 grammes; the largest for any one patient being 255 grammes daily for two days. The average duration of the loss of weight was four and a half days. In other words, the average infant, after treatment was begun at the Home, lost weight at the rate of 35 grammes a day for four and a half days, and then began to gain at the rate of 39 grammes daily.



Thirty-four, or one-third, of the cases did not lose weight, but began to gain at once.

Of 49 cases that did not gain weight, the average daily loss was 40.6 grammes, the greatest being 130 grammes daily for four days. The average stay of these cases at the Home was ten days. It is probable that many of these would have soon begun to gain weight if they had stayed longer, as 18 were considered well, diarrhoea and vomiting having ceased, and the stools showed that the food was well digested.

Of 6 fatal cases, the average daily loss was 29 grammes, the average stay in the hospital being 11 days.

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## A CONTRIBUTION TO THE CHEMICAL STUDY OF THE SUMMER DIARRHOEAS OF INFANCY.

BY VICTOR C. VAUGHAN, M.D.,

Ann Arbor, Michigan.

IN a paper\* published two years ago I stated that the micro-organisms which produce the catarrhal or mucous diarrhoeas of infancy are probably only putrefactive or saprophytic in character, and that they prove harmful by splitting up complex molecules, and forming chemical poisons.

The truth of these statements are constantly being exemplified and made more manifest with every experimental study of the subject. Able and diligent bacteriologists—among whom, Booker, in this country, and Escherich, in Germany, deserve especial mention—have made careful study of the bacteria found in the intestines and stools in these diseases, and all agree that no specific organism has been found. In his first contribution,† Booker reported the isolation of eighteen varieties of bacteria, and in his second paper,‡ fifteen more species are added to the list. In true cholera infantum the proteus group of bacteria was found in fifteen out of nineteen cases, but in the ordinary diarrhoeas there is no constancy

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\* *Medical News*, June 9, 1888.

† *Transactions of the Ninth International Medical Congress*.

‡ *Transactions of the American Pediatric Society*, 1888.

in the species present. Germs which are frequently found one year are rarely seen in the cases observed the next summer. This has been the experience of all who have studied the bacteria of the summer diarrhoeas in infancy.

Last February, Dr. Booker kindly sent me tube-cultures of some of the germs which he has isolated. With three of these I have made some investigations which it is the object of this paper to report. These germs are the X, *a*, and A of Dr. Booker's list. Of these germs the doctor wrote as follows:

"X was found almost as a pure culture in the fæces of a fatal case of diarrhoea.

"*a* was strongly pathogenic when tested last winter.

"A was isolated last summer, liquefies gelatin, and belongs to the proteus group.

Beef-tea cultures of each of these germs were made, and kept in an incubator at 37° C. for forty-eight hours. At the expiration of this time these cultures were used for inoculating flasks of sterilized beef-broth. Eight flasks, each containing about ten ounces, were employed for each germ. These cultures were kept in the incubator at 37° C. for ten days. They were then twice filtered through heavy Swedish filter-paper. The second filtrate was allowed to fall into a large volume of absolute alcohol, feebly acidified with acetic acid. A voluminous, flocculent precipitate resulted in each case. After the precipitates had subsided the supernatant fluid was decanted. The precipitates were then treated with distilled water, in which those from X and *a* were soluble, while that from A proved insoluble. A large volume of absolute alcohol was again added, and the mixtures allowed to stand for four days. The precipitates from X and *a* completely subsided, leaving the supernatant fluids perfectly clear; but in the case of A the subsidence was not complete. The precipitates were collected by decantation and filtration on porous plates, and dried over sulphuric acid. These substances are proteid in composition, but differ from known proteids and from one another. That from X is slightly yellow, as seen deposited in the alcohol, but becomes grayish on exposure to the air. It is readily soluble in water, from which it is not precipitated by heat or nitric acid singly or combined.

It gives the biuret and xantho-protein reactions. It is precipitated by saturating its aqueous solution with ammonium sulphate, and therefore cannot be classed with the peptones. Sodium sulphate and carbonic acid fail to throw it down from its aqueous solution, consequently we must say that it is not a globulin.

This leaves us with no other choice than to place it among the albumens, but we must admit that it possesses properties which do not belong to the known albumens.

The proteid prepared from cultures of the germ *a* is, as seen under the alcohol, very light, flocculent, and perfectly white, but so soon as it is brought in contact with the air, it begins to blacken, and finally dries down on the porous plate in black scales.

It possesses the same general properties in regard to the action of solvents and other reagents which were found to be possessed by the proteid obtained from cultures of *X*.

The proteid of *A* is peculiar, inasmuch as it is practically insoluble in water.

These three proteids are highly poisonous. When injected under the skin of kittens or dogs, they cause vomiting and purging, and when employed in sufficient quantity, collapse and death. Post-mortem examination shows the small intestine pale throughout and constricted in places. The heart has been invariably, so far, found in diastole and filled with blood. The following brief notes from the record of experiments will illustrate the nature of the symptoms and the post-mortem appearances.

A small amount of proteid from bacillus *X*, dissolved in water, was injected under the skin on the back of a kitten about eight weeks old. Within one-half hour the animal began to vomit and purge, and death resulted within eighteen hours. The small intestines were pale, contracted in places, and contained a frothy mucus. The stomach was distended with gas and contained yellowish mucus. The liver was normal, the spleen and kidneys congested, and the heart distended.

Another kitten was treated with the proteid from bacillus *a*, dissolved in water. The vomited and faecal matters in



this case were green. The animal died after fifteen hours, and presented appearances practically identical with those mentioned above.

A third kitten was treated with some of the proteid of bacillus A, suspended in water, and presented substantially the same symptoms and post-mortem appearances.

A fourth animal was treated in the same manner as the above with a proteid prepared from some canned meat. This was done as a control on the above experiments, and the kitten remained unaffected. This experiment demonstrates the fact that the poisonous properties are peculiar to the bacterial albumens.

Concerning the amount of one of these proteids necessary to produce a fatal result in the animals experimented upon, I have made a few experiments.

I injected under the skin on the back of a guinea-pig ten milligrammes of the dry-scale proteid from bacillus *a*. This caused death within twelve hours. Of two kittens treated with fifteen milligrammes, each of the *a* albumen, one died after forty-eight hours, and the other recovered after two days of purging and vomiting. Two dogs, of about five pounds weight, had each forty milligrammes, and after serious illness of two days' duration speedily recovered.

During these two days of vomiting and purging the dogs were constantly shivering as with cold, but the rectal temperature stood at from 102.5° to 103.5° F.

I was inclined at first to suppose that the poisonous effects were due to some ferment carried down mechanically with the proteid in the precipitation with alcohol; but aqueous extracts from the proteid of bacillus A, which is not soluble in water, were without effect upon animals; while small amounts of the albumen, suspended in water and injected under the skin, produced death. From this it would seem that the albumen is itself poisonous.

There has been in no case any sign of inflammation at the point of injection.

Plate cultures have been made from the proteids themselves, and from the blood, liver, spleen, and kidneys of some of the animals killed with the proteid, and these plates have remained

sterile, thus demonstrating that no germ has been introduced into the animal along with the chemical poison.

What conclusions may we draw from these facts when considered in connection with the results of the labors of Booker and Escherich? In order to avoid any waste of time, I will formulate my ideas in the following propositions:

(1) *There are many germs, any one of which, when introduced into the intestines of the infant, under certain favorable conditions, may produce diarrhœa.*

As has been stated, many different germs have been found in the intestines of infants suffering from summer diarrhœa, and we now find that three species of these are capable of producing chemical poisons, which induce effects substantially identical with the symptoms observed in the infants, and it is not unreasonable to suppose that many other of these germs produce similar poisons.

(2) *Many of these germs are probably truly saprophytic.*

A germ growing in the intestine does not necessarily feed upon living tissue. The food in the duodenum before absorption has no more vitality than the same material in the flask. Moreover, the excretions poured into the intestines from the body are not supposed to be possessed of vitality. A germ which will grow upon a certain medium in the flask and produce a poison will grow on the same medium in the intestine and produce the same poison, provided it is not destroyed by some secretion of the body.

(3) *The only digestive secretion which is known to have any decided germicidal effect is the gastric juice; therefore, if the secretion be impaired, there is at least the possibility that the living germ will pass on to the intestine, will there multiply, and will, if it be capable of so doing, elaborate a chemical poison which may be absorbed.*

There is no longer any doubt that the acid of the gastric juice has a marked germicidal effect upon many micro-organisms.

I have found that an exposure to a two-tenths-per-cent. solution of hydrochloric acid for half an hour will destroy Eberth's germ and two poison-producing bacilli which I have isolated from drinking water, which was believed to have

caused typhoid fever. Although the germicidal effect of this acid has not been tried on the bacteria under consideration, I doubt not that it will be found to be considerable.

The chief reason why the breast-fed child has a better chance for life than the one fed upon cow's milk lies in the fact that the former gets its food-germ free; but a second reason is to be found in the larger amount of acid required to neutralize the cow's milk, as has been pointed out by Escherich. The gastric juice is the physiological guard against infection by way of the intestines.

It is also possible that some of the secretions poured into the intestines have germicidal properties, or that the cells, in absorbing the poisonous albumens, may to a limited extent so alter them that they are no longer poisonous, or that in a perfectly normal condition the liver may be able to prevent these poisons from entering the general circulation without change. These are all possibilities which science at some time in the future will investigate.

(4) *Any germ which is capable of growing and producing an absorbable poison in the intestine is a pathogenic germ.*

It is not necessary that a germ be capable of growing and causing disease and death, when injected under the skin or into the blood, in order to establish its right to rank with the pathogenic germs. In the blood the organism is acted upon by a wholly different fluid from that with which it is surrounded in the intestine, and the germicidal properties of the blood have been unquestionably demonstrated.

(5) *The proper classification of germs in regard to their relation to disease cannot be made from their morphology alone, but must depend largely upon the products of their growth.*

As I have demonstrated in the first part of this paper, three micro-organisms, differing sufficiently to be recognized as of different species, produce poisons all of which induce vomiting and purging, and, when used in sufficient quantity, death. Morphologically these bacilli may not be closely related, but physiologically they are near akin.

If these deductions be true, we will try to avoid the introduction into the alimentary canal not only of the so-called specific pathogenic germs, but of all toxicogenic micro-organisms.



## SOME POINTS IN THE ETIOLOGY AND TREATMENT OF THE DIARRHOEAL DISEASES OF INFANCY.

BY FLOYD M. CRANDALL, M.D.,

New York.

IT is the object of this paper to present a few facts derived from the study of diarrhoeal diseases of the past summer. They are drawn from the tabulated histories of one hundred and thirty-five patients seen in private practice and at two dispensaries,—the Northwestern Dispensary on the west side of the city and the Polyclinic on the east.

The classification employed is that of Dr. Holt's in Keating's "Cyclopædia." Of these cases, 69, or sixty-five and nine-tenths per cent., were of the dyspeptic type, mostly acute, and 46, or thirty-four and one-tenth per cent., were cases of enterocolitis. Diarrhoea marked by large serous passages was not uncommon, but there was no case of undoubted classical cholera infantum.

Ages ranged from one month to four years; 116 cases, or eighty-five and nine-tenths per cent., occurred under two years of age; and 70 cases, or fifty-one and one-tenth per cent., between the sixth and eighteenth month.

These percentages are very similar to those reported by other observers. Dr. Holt has reported 772 cases, of which, eighty-one and six-tenths per cent. occurred under two years. Dr. J. Lewis Smith has reported 573 cases, of which, ninety-three and seven-tenths per cent. occurred under two years. I have also to report 403 cases from my class at Bellevue Hospital in former years, making, with those of this year, 538. Of these, eighty-one and one-tenth per cent. occurred under two years, and eighty-eight and sixth-tenths per cent. under two and a half years. I have also collected 474 cases treated during the past summer at the Northwestern Dispensary, and 643 from the Bellevue Out-Door Departments, sufficient to make exactly 3000. Tabulation of the figures obtained from these various sources shows the following results:

First six months.....	413 cases,—	13.7 per cent.
Second six months.....	873 “	29.1 “ “
Third six months.....	722 “	24.1 “ “
Fourth six months.....	514 “	17.2 “ “
Over two years.....	478 “	15.9 “ “
Under two years.....	2522 “	84.1 “ “
Between six and eighteen months	1595 “	53.2 “ “

Susceptibility to the disease would seem, therefore, to be almost limited to the first twenty-four months of life. The close correspondence of the percentages of the various observers with the total is very striking, and would seem to show that these numbers express the facts for New York City.

The first of these cases, a private one, developed on June 9. The first case appeared at the Polyclinic on June 18. It had developed June 10. Observations upon this subject were incomplete during June. The date of onset, after July 1, is shown by the following table:

	Dyspeptic.	Entero-Colitis.	Total.
July.....	36.	12	48
August.....	17	7	24
September.....	13	7	20
October.....	8	4	12
November.....	1	0	1

Of the dyspeptic cases forty-three per cent. developed during the first twenty days of July, while of the inflammatory cases but thirty per cent. developed during the same period.

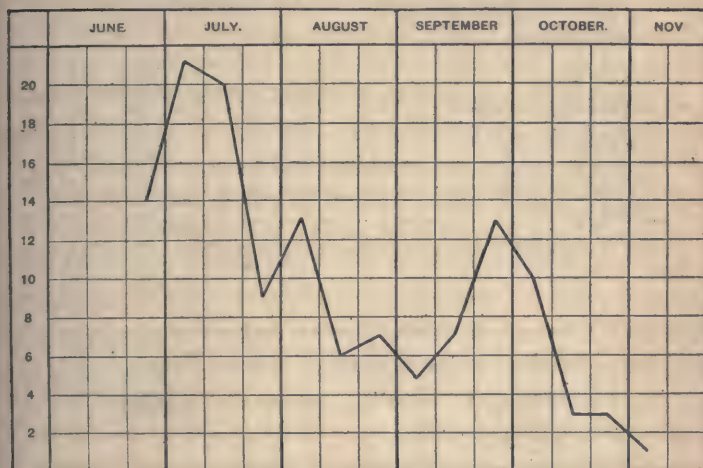
The disease was most prevalent during the first twenty days of July. There was then a very sudden and marked decrease until August, when there was an increase for about ten days. From the 10th of August to the 20th of September the development of new cases was remarkably uniform, averaging less than one-third that of early July. Late in September there was another sudden and decided increase, lasting for about two weeks.

Study of atmospheric temperature records gives no satisfactory explanation of these fluctuations in the development of the disease. The average temperature for the first ten days of July was 75.1° F.; for the last ten days, 74.4°; and for the last ten days of August, 73.1°. Neither of these periods

was especially marked by excessive daily fluctuations of temperature.

TABLE

*Showing the date of onset of diarrhœa after June 20.*



Upon tabulating the histories, examination of the column in which was placed the number of passages per day revealed a striking decrease after July 20. Twenty or more passages were very common before that date, but rare after it. This means a change in the prevailing type of the disease. Serous diarrhœa characterized by frequent watery passages was common in July. In August the prevailing type was that of the thicker grumous green stool, of much less frequency.

Thus there were three quite distinct periods. The first, beginning the middle of June, terminating about the middle of July, in which diarrhœa was more prevalent than at any other time, the serous type being common. The second, from the first of August to the middle of September, during which comparatively few new cases developed; the number of cases under treatment, however, being large, for entero-colitis was common, dating back in many instances to a dyspeptic diarrhœa in July. The third, during the latter part of September and first of October, in which the cases were numerous and largely of the dysenteric type.



Much care was exercised in obtaining the facts concerning feeding. Mothers alleging exclusive breast-feeding were questioned with especial care. No case is classed as breast-fed which was accustomed to receive even the smallest quantity of cow's milk or any article from the table. The results were as follows :

Breast alone.....	10, died 0
Breast and bottle.....	19 " 2
Breast and table.....	16 " 1
Cow's milk (with or without an infant food).....	17 " 0
Condensed milk alone.....	12 " 2
Table alone.....	38 " 0
Table and bottle.....	16 " 1
	<hr/>
	128      6

Partially nursed, 35 (twenty-seven and one-tenth per cent.); table-fed, wholly or in part, 70 (fifty-four and eight-tenths per cent.); breast-fed (10 children), seven and eight-tenths per cent. of the whole number.

In computing the percentage of the breast-fed, the whole number of patients is not a proper basis, for many of them were past the nursing age. Assuming twelve months as the limit for the nursing age, the percentage becomes fifteen and eight-tenths.

Several of the mothers were themselves ill, one was excessively anæmic, one was pregnant, and two were menstruating. But the actual cause seemed to me to be improper methods of nursing. These children, without an exception, were nursed at irregular intervals. The breast was given at any hour of the day or night at which it was demanded. Neither the nipple nor the mouth were ever cleansed after nursing. Milk was left to decompose and become infected with bacteria to be carried into the stomach at the next feeding.

The highest mortality was among those fed exclusively on condensed milk. One of the chief objections to its general use is the difficulty of determining the proper proportions, and the erroneous ideas of mothers as to its preparation. As seen in the dispensaries, some children are greatly overfed, while others are literally starving to death.

The apparent good results of exclusive table-feeding is

readily explained by the fact that all the older children are included in that class.

The ultimate result is known in 127 cases. Of these, 85 were dyspeptic, of which, 3, or three and a half per cent., died; 42 were cases of entero-colitis or colitis, of which, 3, or seven and one-tenth per cent., died. The death-rate for all cases was four and seven-tenths per cent. Of these six deaths, two occurred in July, one in August, one in September, and two early in October. Two children were decidedly marasmic, one was rachitic to a marked degree. Only one developed thrush prior to death. Ages of the patients who died ranged from one to sixteen months.

A series of 13 cases presenting symptoms commonly known as dysenteric was of considerable interest. I am well aware that pathologically cases of this class present no evidences beyond those of intense entero-colitis or colitis. Clinically every case presented distinctive features. Ten of the thirteen occurred between Thirty-sixth and Forty-first Streets, west of Eighth Avenue; nine of them after September 1. Five were on Forty-first Street, four of them in one house, at No. 442. I heard there were other similar cases in the house.

The onset of distinctive symptoms in each case was definite; in ten of them sudden, the mother being able to name the day and almost the hour. The passages after the first few hours were frequent and small, consisting wholly or in part of mucus, usually in colorless or brownish jelly-like masses, streaked with blood and containing blood in small clots, and after a few drops pus. Straining or tenesmus was always present. Vomiting occurred occasionally, but was not troublesome. Fever was invariably present and was usually high.

The medicinal treatment was the same in each case. It consisted in the administration of castor oil to remove decomposing matter and flush the bowel from above, and sufficient opium to relieve pain and tenesmus and quiet restlessness.

Irrigation of the bowel has always been in my experience eminently satisfactory. It is rational treatment, old and well-known, but is not as generally employed by the profession at large as it should be. Of these cases, ten received rectal injections of some character. Large injections of bismuth were

given to two patients, two drachms of the powder being used. Much difficulty was experienced in holding it in suspension sufficiently perfect for injection through a long tube without clogging. Smaller injections of fifteen grains, suspended in mucilage and peppermint-water, seemed to allay rectal irritability. It is doubtful if bismuth can be of avail without previous irrigation, while, after irrigation, but little additional relief seemed to be afforded.

In six cases the larger intestine was irrigated with a weak solution of borax or common salt. The operation was made as simple as possible. A rubber sheet was spread across the lap of the nurse and gathered into a pail. A large-sized gum catheter, attached to the tube of a fountain syringe, was passed eight to ten inches into the bowel, the water being allowed to flow during its passage, opening up the way. From two to four quarts of the solution were used, the excess flowing out around the catheter. This is therefore an irrigation, not a simple injection. One washing a day thoroughly done is more effectual than an imperfectly-given injection every hour.

These patients all made a rapid recovery, and the good results of the treatment were undoubted. The straining would decrease and sometimes wholly disappear, and the passage in most instances was stopped for several hours.

In two cases small injections were given by the mother, evidently with relief to the patient, though recovery was slow. Excessive tenesmus or partial prolapse of the rectum was usually much relieved by application of a two-grain solution of nitrate of silver.

Of the three patients receiving no injections, one recovered in eleven days and two died. One, however, was in the worst of surroundings and was utterly neglected.

Indiscriminate irrigation is to be condemned. The indications for its employment, which I have followed, are small mucous passages accompanied by straining or tenesmus, or the appearance in the stools of pus, clotted mucus, or blood.

Numerous observations and experiments of recent years have pointed to acids as, theoretically, valuable agents in the treatment of summer diarrhoea. Practically their value has long been acknowledged. I attempted during the summer to de-



termine their efficiency with more certainty, or more correctly the relative value of acids and alkalis. An acid was given to every other case, while the alternating case received an alkali. Castor oil was always administered unless the passages were very large and watery, and the acid or alkali was added to a simple bismuth mixture without opium. Dilute hydrochloric acid was employed in doses of one to two minims for each year of age, and was usually given at intervals of two hours.

TABLE

*Showing the ultimate results of treatment by acid and alkali.*

	Improved under treatment and recovered.	Unimproved but recovered.	Died.	Total.
Acid ...	38 cases, 88.7 per cent.	4 cases, 9.1 per cent.	1 case, 2.2 per cent.	43 cases
Alkali..	31 cases, 75.7 per cent.	8 cases, 19.5 per cent.	2 cases, 4.8 per cent.	41 cases

Though this is distinctly in favor of the acid, the number of recoveries alone is not a test of the success of treatment. The duration of the disease and the condition of the patient while under treatment is far more reliable. I regret that many of these cases in which the ultimate result was known were not followed sufficiently close to know the actual course of the disease.

TABLES

*Showing the comparative results of treatment in fifty-four cases.*

Acid.	Recovered.	Improved.	Unimproved.	Died.	Total.
Four days or less..	13	3	2	..	18
Five to eight days	4	2	1	1	8
Ten days and over	2	..	..	..	2
Total	19	5	3	1	28

Alkali.	Recovered.	Improved.	Unimproved.	Died.	Total.
Four days or less..	8	2	3	..	13
Five to eight days	2	3	2	2	9
Ten days and over	2	1	1	..	4
Total	12	6	6	2	26

Of the patients receiving the acid, forty-six and a half per cent. recovered within four days, and fourteen and two-tenths per cent. were improved. Of those receiving the alkali, thirty and seven-tenths per cent. recovered during the same time, and seven and seven-tenths per cent. were improved.

Study of individual histories leaves no doubt of the beneficial effects of acids in almost all forms of diarrhœa. Some cases doing badly on alkalies at once improved when changed to the acid, while the reverse is equally true. I hoped to be able to discover some more definite clinical indications for the use of the two drugs than have yet been given, but the results were rather unsatisfactory. While on the whole acids were more efficacious than alkalies, I was unable to determine with certainty in any individual case which would yield the best results. The good effects of acid were most marked in cases of several days standing, and particularly in the so-called *lienteric* diarrhœa. The alkalies were most effective in the earliest stages and in cases marked by sour vomiting. In late stages when active diarrhœa has been checked, but digestion is impaired and convalescence is slow, when the passages are not yet normal, and any indiscretion threatens a return of the disease, acids are strongly indicated.

General conclusions are those that have been already formulated by others: alkalies in the earliest stages, acids in the later stages, in conjunction with other remedies.

#### DISCUSSION.

DR. BOOKER.—In my work on the intestinal bacteria of infants affected with summer diarrhœa, I have realized the importance of studying the chemical action of the bacteria, but have been unable to carry this out for want of a proper chemical training.

It is fortunate that so distinguished an investigator as Dr. Vaughan has interested himself in the subject, and we are to be congratulated that he has presented to this society the valuable results of his research.

For some time there has been an impression among those who have given special attention to the intestinal bacteria in children that the injurious effects of the bacteria are more of the nature of chemical products formed by them than of a direct action of the bacteria upon the intestinal wall.

The investigations of Dr. Vaughan afford a scientific basis for this belief.

In the present state of our knowledge of intestinal bacteria in children, it appears that different forms of injurious chemical action may be produced by different varieties of bacteria in the intestine. One form of chemical action consists in an excessive production of acid, causing an irritation of the intestinal wall; another, in the formation of poisonous products which are absorbed and give rise to toxic symptoms.

It would be premature and unsafe to make positive statements from my study of the bacteria isolated from the diarrhoeal fæces; yet a comparison of the bacteria isolated from the different cases with the clinical history of these cases indicates a variation of the bacterial vegetation in the different forms of summer diarrhoea.

In children having diarrhoea without toxic symptoms, those varieties of bacteria were chiefly found which, as far as their chemical action has been studied, cause acid fermentation of milk.

In children having diarrhoea with toxic symptoms other varieties of bacteria appear, and often in great quantity, among which are bacteria which cause putrefaction in albuminous compounds.

It is of special interest that the three varieties of bacteria which Dr. Vaughan selected for study, and from which he obtained the important albuminous products, were found almost exclusively in children having diarrhoea with toxic symptoms.

These three varieties of bacteria are considered the most important of the thirty-five which I have isolated from the diarrhoeal fæces.

The two liquefying varieties are described in Volume I. of the Transactions of this society.

The study of the biological and pathogenic properties of these two varieties, with the clinical history of the cases in which they were found, has led me to expect just such results as Dr. Vaughan has obtained.

The third variety, bacillus X, was isolated during the past summer, and has not yet been described. It was found in only one case, but from its enormous quantity in the fæces, together with the condition of the child, it was regarded as an important variety.

The child had been sick one month, was emaciated, restless, and had frequent watery and odorless stools. Death occurred in a few days after the cultures were made from the fæces.

Only two varieties of bacteria were found in this case,—



bacterium coli commune and bacillus X, the latter greatly predominating.

We are not sufficiently acquainted with the antiseptic condition of the digestive canal to speak with any degree of certainty on the subject.

As far as may be judged from tests made outside of the body, the acid of the gastric juice is the only secretion of the digestive canal possessing antiseptic properties. In infants, especially those fed on an exclusive milk diet, there are modifying circumstances which may diminish the antiseptic property of this secretion materially, such as the relatively smaller quantity of hydrochloric acid secreted in infants, the absorption of this acid by milk, and the short time that milk remains in the stomach of infants.

I have examined the stomach contents, obtained by expression, of twenty children, subject, however, to the objection of having been made on dispensary patients, in whom it was not practicable to accurately determine the interval after feeding in each case. As the results correspond with those obtained by others, it may not be without interest to state them.

Three of the children were from two to three years of age, and fed on a mixed diet; the others were under twenty months of age, and fed on milk diet. Phloroglucin-vanillin reaction for free hydrochloric acid was manifest only in the stomach contents of the three older children. In these cases very few, if any, colonies of bacteria grew in cultures made from the stomach contents, but fungi, especially *oidium lactis*, were quite abundant. Free hydrochloric acid reaction was not found in the stomach contents of the children fed on milk diet. In these cases colonies of bacteria were more numerous in cultures from the stomach contents, but even here the paucity of colonies was in striking contrast to the enormous quantity in cultures from the *fæces*.

It is doubtful if the infant's stomach is protective to the intestine from injurious organism. It is more probable that protection is afforded by the absence in the intestine of suitable conditions for the growth of such organism.

When injurious bacteria find the conditions for their growth in the intestine, the best means we have for their removal consist in a free evacuation of the intestine, temporary withdrawal of food, and change in diet, based on the condition of the child and the nature of the stools.

DR. FRUITNIGHT.—The subject is such a vast one that I will only speak of treatment, and in as brief a way as may be. At the sea-side hospital, conducted by St. John's Guild of New York City, over one thousand very sick children are

treated every summer, and it is a standing rule for the house staff to give as little medicine as possible, or none at all in suitable cases. Now, these children are the sickest of the sick, and are selected from the sick sent down the bay four times a week on the floating hospital. It is surprising to see what a change is brought about by the sea-air, correction of diet, bathing, hours of rest, and other approved hygienic measures.

With regard to therapeutics, based on the idea that the disease is of bacterial origin, I gave a pretty thorough trial of naphthol, salol, salicylate of bismuth, resorcin, etc., but never found that they verified the theory. As to salicylate of bismuth, it is a dangerous remedy. It frequently causes ecchymosis in the gastric mucous membrane, and should be used sparingly. The important point in the treatment is the regulation of the diet. I have often ordered a discontinuance of milk entirely for several days, putting the patient perhaps upon some farinaceous food, as barley gruel, reinforced by white of egg mixed in water, cracked ice, with whiskey or brandy or champagne. If this change of diet causes indigestion, milk may be added, but always sterilized. As to beef-tea, in my hands it has been prejudicial because of the laxative action of its salts. One of the most important measures is bathing, particularly with alcohol and water. A sponge-bath several times a day has a derivative effect upon the intestinal tract and a sedative one upon the general system. Before administering drugs the bowel is irrigated high up by means of a catheter, and in some selected cases the stomach is also washed out after Dr. Lister's method. Among drugs, I have used with most satisfaction the mixture of chalk and some mild opiate, combined with quite large doses of subcarbonate or subnitrate of bismuth. If cerebral symptoms threaten, I omit the opium. In cases of a dysenteric nature, I do not irrigate the bowel, and control the tenesmus and bloody discharges with the elixir of coto bark.

DR. HOLT.—I would say a word with reference to classification. It is very difficult to classify these cases satisfactorily. One criticism which I would offer is the general use of the term catarrh. If we mean inflammation of the intestine (and catarrh means this if it means anything), let us call it enteritis, colitis, or gastritis. I think we have an idea that somehow or other there is something intermediate between inflammation and catarrh. The most important distinction which I have been able to make from a study of these cases microscopically has been to divide them into two classes,—(1) Those in which there are no exudative lesions in the intestine; nothing but a desquamation of the superficial epithelium, and depend-

ing, it would seem, as Dr. Vaughan has suggested, upon decomposition due to bacteria. (2) Cases in which there are actual inflammatory changes, those changes being sometimes much more marked than we have any idea of. I began the study of these cases with the belief that there was not much to be found in the intestine. But careful microscopical study of the changes did not support that view. There are in a large number of cases inflammatory lesions of the most serious type; infiltration of the mucosa, which sometimes extends through to the muscular coat. Sometimes even the peritoneal coat is infiltrated.

In treatment it is desirable to differentiate between the cases in which actual lesions are present and those in which we can discount the lesion, and simply say the process is one of decomposition,—a functional disorder. If we can find some guide in differentiating between these two classes of cases, it will be of the greatest advantage. The most important one, I think, is probably the temperature. I have never yet found at autopsy marked lesions but where persistent temperature had been present. I do not mean the initial rise, which lasts usually twenty-four or thirty-six hours. That is found in the vast majority of cases. I mean a persistent temperature, lasting four, five, or six days, and running up to from  $101^{\circ}$  to  $104^{\circ}$  F. I believe that invariably at autopsy in such cases lesions will be found. But where the rise in temperature is only transient lesions are almost always absent. It is, therefore, most important to have a record of the temperature in these cases.

It seems to me, then, that there are two classes of cases; those where there is decomposition and functional disorder, or cases of acute mycotic diarrhœa depending on bacteria or their products; and other cases of inflammatory diarrhœa or entero-colitis.

With reference to the bacterial side of the question, it is a very complicated one. Equally important with it in etiology, I think, must rank the local conditions in the intestine, which render the child susceptible. In certain children we can tell long beforehand that they will have diarrhœal trouble in the summer because gastro-intestinal functions have never been normal. A slight amount of functional derangement present so diminishes the local resistance of the tissues that the very best possible predisposing conditions to acute mycotic diarrhœa are present.

Regarding the use of drugs, I think we give too many. The more cases of summer diarrhœa which I treat the fewer drugs I give. I am certainly free to admit that the treatment



of summer diarrhoea by drugs alone or chiefly is a failure. I do not believe it is possible to give any drugs by the mouth which will control in any efficient way decomposition in the intestine, particularly the lower intestine, and that is where we have most trouble,—the colon. I think the condition of the stomach may be to a degree modified by drugs, but where the gastric symptoms are slight, or absent altogether, I think these drugs will fail. The only drug which comes in contact with the lesions directly I think is bismuth. Failure from it comes from too small doses. I give to a child a year old at least two drachms daily, and half an ounce to those older. This drug acts locally, and, as said, is the only one which reaches the seat of the lesion,—the last one or two feet of the ileum and the colon. Drugs may do a great deal of harm. Indeed, I think an immense amount of harm has been done by drugs in summer diarrhoeas,—not only by opium, but by vegetable astringents as well. The latter seem to me to be worthless in a vast majority of cases. All of the tannin preparations interfere with the already feeble digestive powers of the stomach, and thus do harm. They act only locally, and in order to have any local effect such a large quantity has to be given as to do more harm in the stomach than they can possibly do good in the intestine.

Then, too, we have a *patient* to treat. We should never lose sight of that fact. In our studies of bacteria, of acid and alkaline stools, etc., we are apt to forget that we have a living baby to consider. The success of every measure in treatment should be estimated by its effect upon the general condition of the child. Here, where little or no food is absorbed, where digestion is often completely arrested, we should give foods which have been quite digested, or stimulants. I have found great benefit the past year from the use of completely peptonized milk. I do not think it is sufficiently used. Put into the milk five grains of the extract of pancreas, fifteen grains of the bicarbonate of soda, let stand two hours, and it will become completely peptonized. It is quite bitter, but nitrohydrochloric or hydrochloric acid and a little sugar may be added to cover this up; and it makes a palatable food, many, in fact most, infants taking it without any addition. It is not likely to upset the stomach.

Irrigation of the colon I have found on the whole beneficial; it need not be very frequently repeated. I think nothing is better than a saline solution,—a teaspoonful of salt to a pint of water.

DR. BLACKADER.—I do not know that I can add much to what has gone before. The question has always been before

me, why is it, as the facts brought out by Dr. Crandall and others show, that the disease under discussion is limited to those under two years? Is it the food that these children live on,—milk? But many of these patients, after the twelfth or thirteenth month, do not live on milk food. So I hardly think the food can be put down as the cause. Is it because the glands are to an extent in a developing stage? I have in a measure excluded that also, although it is possibly a factor in the case. I have been unable to arrive at any complete satisfactory explanation.

I have myself come to the conclusion, as Dr. Holt and others have reached, that drugs for the control of this form of diarrhoea are of very little value. My own feeling has been, first of all, to correct the effect of the lowering of the vital powers caused by the heat. That should always be borne in mind. I think the pain should to a certain extent be lessened, and I invariably give opium by the bowel in sufficient doses only to control or modify slightly the peristaltic action of the bowel and to keep the child free from pain to a certain extent, believing pain is a strong depressor of the nervous system and interferes with digestion. I believe starvation and change of diet is one of the best modes of controlling the growth of the bacteria. My treatment has come down to this: a laxative at the outset, pepsin, opium by the bowel in small quantities. Beyond that I do not see much reason to proceed. At the same time, of course, the vital powers should be kept up. And one of the best means of controlling the bacteria is to enhance the resisting power of the child. If we allow the vital powers to be lowered in any way at all, we favor the absorption of the ptomaines and the growth of the bacteria.

(To be continued.)

## **Clinical Lectures.**

### **CHOREA, BRONCHO-PNEUMONIA, ETC.**

BY A. JACOBI, M.D.,

Clinical Professor of the Diseases of Children, College of Physicians and Surgeons,  
New York.

THIS girl is five and a half years old. Her parents are healthy. She had measles three years ago, and has been delicate ever since. She had chorea a year ago, but there is no history of rheumatism or of "growing pains." The chorea returned a short time ago, beginning in the left lower extremity, which is unusual. Besides this, she has a double cardiac murmur, which extends over the whole of the left side of the chest anteriorly, and is also heard posteriorly. There is dulness on the left side, extending a little to the right of the sternum, with rhonchi of different descriptions extending down from above the crest of the scapula; there are also rhonchi on the right side, with less than the normal pulmonary percussion sound. She had whooping-cough last winter, the cough ceasing about six weeks ago. Two days ago she had chilly feelings and fever, and vomited yesterday. The tongue is coated, the bowels regular, the temperature in rectum is 104° F.

Evidently we have to deal here with several conditions, some of which are old, some new. One of the new is undoubtedly the pulmonary complication. The dulness and the rhonchi of different descriptions cannot be regarded as anything else than broncho-pneumonia, judging from the assistant's findings in the case. That is very much more probable, since I discover at this moment rhonchi on the right side also, with less sonorous percussion than is normal. I say that because, as a rule, broncho-pneumonia is not found on one side only. In most cases it is posterior and on both sides. The very fact, therefore, that the sounds are heard on the two sides points to the probability of the process being a broncho-pneumonia, and not a genuine fibrinous pneumonia.

What is it due to? You may have broncho-pneumonia occur spontaneously after chorea, or after bronchitis, without any heart complication. But it is probable that, in consequence of mechanical stasis, there is a catarrh in every case of heart-disease, particularly where the mitral valve is affected. The history of such cases is heart-disease, impediment to the circulation, catarrh, and in consequence of the catarrh a bronchitis and broncho-pneumonia. While there might have been, as a mere accidental occurrence, a broncho-pneumonia with a



cardiac complication, yet the existence of the latter would facilitate the appearance of an extensive broncho-pneumonia.

What was the heart-disease due to? We do not know. We do know that, as a rule, cases of heart-disease at this child's age are not any longer to be regarded as congenital, particularly when the left side is affected, congenital heart-disease being most frequently found on the right side. Most cases are due to rheumatism. Rheumatism in infants and children, as you know, is frequent, much more frequent than the books teach. The so-called "growing pains" of infants and children are mostly nothing else than rheumatism. The mother says this child never had rheumatism or growing pains, so that we are in the dark regarding the origin of the heart-trouble. But rheumatism is very frequently overlooked in children, and so it may have been here. The joint affections are often quite mild, but consecutive endocarditis is quite frequent.

Some years ago this child had measles and has been delicate ever since. That means the measles left something behind, as it frequently does. What measles can leave behind is a broncho-pneumonia or a permanent bronchitis, which is such a common accompaniment of measles. Besides, in a few cases endocarditis will occur during and after measles.

A year ago the child had chorea, which got well, but returned recently, when it was also found that she had heart-disease. What is the connection? I think I have before alluded to the fact that when we have to deal with a chorea minor in children there is likely to be a series of symptoms like this: first articular rheumatism, be it ever so mild; then heart-disease; afterwards chorea minor. There are cases in which the rheumatic affection shows itself not so much in the joints, but first in the heart. There are others again, though rare, in which the rheumatic disposition shows itself first as a chorea minor, then after a while perhaps as articular rheumatism or endocarditis. Such cases being now and then observed prove that chorea minor in some instances ought to be taken as a direct result of a rheumatic process, although there be no joint affection. In such cases, as stated, the chorea minor comes first, and one or both of the other two manifestations of rheumatism come afterwards. It appears that this was such a case, that the chorea came first, and rheumatic endocarditis afterwards.

The chorea in this case is somewhat peculiar. In the large majority of cases it shows itself first in an upper extremity, usually the right; afterwards in the rest of the extremities and different parts of the body. Here it began in the left leg. That would suggest that it was the result of an embolic

process. That the child should have embolism of the brain, or anywhere, with such extensive heart-disease is quite natural. A great many of the severer forms of chorea minor are undoubtedly of cerebral origin, and not a few embolic. As only one limb was affected in her case, I judge it could only be explained by the presence of a small embolus, very probably in the third frontal convolution where it controls the lower extremity.

What ought to be done for a child which has a number of different diseases complicating each other, there evidently being imminent danger? A bilateral lobular pneumonia is a serious disease; a chronic endocarditis is a serious disease. We do not know to what extent there may occur, at any moment, an acute exacerbation. The two diseases together certainly give rise to imminent danger. The child ought to be in bed. It ought not to be covered very warm. The feet ought to be warm, the rest of the body moderately cool. Air ought to be allowed to get into the room. The bowels, if they have not been opened, might be opened with a dose of from three to five grains of calomel. Cold applications ought to be made to the heart. A napkin, not too heavy, ought to be folded up, dipped in cold water, wrung out well, and laid over the region of the heart, then covered with a piece of cotton batting, and over that a piece of oiled silk, so as to protect the clothing and bedding. It ought to be changed every fifteen, twenty, or thirty minutes. That will have a good effect; it will quiet the heart, cause the child now and then to take deeper inspirations which clear some of the bronchi of mucus, and it will reduce the temperature to a certain extent,—not much. The temperature itself is not very high.  $104^{\circ}$  is certainly not very high, but the probability is that about five or six o'clock it will increase. If that is found to be the case, it will probably prove useful to give the child an antipyretic. The question is, Which should be selected for that purpose? I should not advise to give salicylate of sodium, antipyrin, or antifebrin. They are apt to weaken the heart. Of all the new antipyretics, it is probable that a few doses of phenacetin occasionally administered would do much good. When you use any of them, however, I would advise you always to give a stimulant at the same time. Have the child take three grains of phenacetin every two to four hours in a teaspoonful of water or milk, or combine it at once with a dose of sparteine, strophanthus, or digitalis,—one of the heart-tonics. Give the tonic at once, and do not wait, for in a case of this kind, if you wait until the heart gets weak, it may lead to collapse. There is no use

in waiting until there is collapse, then giving ammonia or brandy; the child then may not recover. It is better to commence at once with the stimulant, particularly in a case of pneumonia. The disease must necessarily last a week, perhaps two weeks, and it is worth while to consider the chances of that child to pull through. A child, in order to get well of a pneumonia, has to live until the pneumonia gets well. That sounds trite, but I believe there is a good deal of practical wisdom in it. Unless you commence to stimulate the heart of such a child at once you are too late. This child should have two drops of tincture of digitalis at once, particularly after the exertion of coming here; it should be repeated every hour until to-morrow, when it should perhaps be given only every two hours, or, according to circumstances, every three hours. But I feel positive that a dose of two drops given to-day every hour is not too much. With this amount the pulse, which is 144 to 150, will not probably fall more than to 130 or 120.

But the important thing in a case of this kind is the feeding of the child. What shall it be fed on?

By many practitioners beef-tea seems still to be regarded as almost a panacea. But there is not much albuminoid substance in so-called beef-tea. If you were to give peptones, say peptonized beef, there would be a fair expectation that it would be absorbed readily, so that the stomach would have nothing to do with it, or very little except to absorb it. But the stomach, under a temperature of 104° to 105° F., does not secrete gastric juice, and there is no use of putting albuminoids into it which require digestion. If you were to give such a child as this beef, or even beef-tea, it would not digest it. And if there is any danger to a patient with fever, it is the presence of albuminoids in the stomach which cannot be digested, but remain there. It has long been known that dyspeptones, the results of unabsorbed or not fully-digested peptones, are dangerous elements. And as long as there is little secretion of gastric juice by the enfeebled stomach, you cannot expect beef, egg, or even beef-tea to be digested. They will remain dyspeptones, which will not be absorbed at all, but, on the contrary, will undergo decomposition, increase the quantity of putrid substances in the stomach, and add a new danger. But lactic acid, with which digestion is begun, is secreted during feverish condition, and thus it is that farinaceous foods are not only well digested but are craved. Such patients want farinaceous food, and not albuminoids. This child should live on farinaceous food and milk for the present.



Then patients with fever should have plenty of water. In this case it might be well to mix a little whiskey with it. Being four years old, she might take an ounce of brandy during the twenty-four hours, well diluted with water. The main things are, then, plenty of water, farinaceous food, and a certain quantity of milk. This is all that I recommend for the time being. The child wants feeding, absolute rest, control of the temperature if it should become too high, say  $104.5^{\circ}$  or  $105^{\circ}$  F., and let it have fresh air. It ought to be seen once a day. To send a child as sick as this one to the dispensary is certainly not the best thing to do. It should be at home abed, or in a hospital.

#### RHACHITICAL CHEST.

The history of this case, taken by the assistant, reads as follows: A child, fourteen months old, of good family history. The mother has had ten children, seven of which have died. The first and second were twins, and both died, when six weeks old, of convulsions and diarrhœa. The third is eleven years old, is alive and healthy. The fourth died of scarlatina at four. The fifth is healthy. The sixth died of measles, aged ten months. The seventh, aged four months, died suddenly in convulsions. The eighth and ninth were twins, one still-born, the other died, aged four months, of a sickness which began with convulsions and continued two days.

The present patient is the tenth and last child. It was born two weeks before it was expected; is sickly and delicate; constantly suffers from snuffles. When two weeks old it had diarrhœa, which lasted three weeks, leaving the child much emaciated. No previous history of pneumonia or pleurisy. At birth there was no deformity of the chest. Present condition: All superficial veins prominent. Square and broad rhachitic head. Anterior and posterior fontanelles open. All the sutures can be felt; the hair has fallen and worn off behind; the scalp is covered with a fine fuzz. The child sweats freely about the head; has the snuffles, catarrhal conjunctivitis, only two teeth (lower central incisors); is fed on the breast and occasionally by bottle. There is slight enlargement of some of the cervical glands. The epiphyses are slightly enlarged. The superficial veins on the abdomen are moderately prominent. The abdomen itself is very prominent. There is no enlargement of the spleen or liver.

There is a hump in the lower dorsal region, involving five vertebræ; a lateral rotary curve in the upper dorsal region with the convexity to the left. The kyphosis almost disappears under extension, the lateral curvature diminishes somewhat, but not much.

Respiration 54, pulse 144, temperature normal. The heart-sounds are increased in intensity, no murmur; the organ seems slightly deviated towards the right.

The right lung is apparently all right. The respiratory murmur is present over the whole of the left side, except at the apex, both anteriorly and posteriorly, where there is marked bronchial breathing and bronchophony. The whole left side of the chest is sunken in, the deepest depression being where the axillary line crosses a line drawn from the left nipple to the dorsal vertebræ. There is no absence of ribs.

You have heard the written history. It contains so many points that it would be impossible to dwell on all of them. The doctor says he thinks the bronchial respiration on the left side is due to compression of the lung, and not to pneumonia.

Calling your attention to a few of the points, it will be remembered that the pulse is 54, the respiration 144. That is a proportion of one to two and three-quarters. The normal proportion between the respiration and the pulse is one to three and three-quarters. I have taught you that when there is found a change in the relation between the respiration and the pulse, to go to the lungs to explain it, that is, when there are many more respirations than there ought to be compared with the number of heart-beats. As a rule, in such cases, we have to diagnosticate pneumonia. But the doctor has already described a condition here in which the respiration may be interfered with even without the presence of a pneumonia. The lung is simply crippled for want of space, and it is quite possible this disproportion between the respiration and the heart-beat means nothing else.

Another point which he made was that there is no heart-murmur, but it appears that the shock of the heart is felt over a larger space and is louder than usual. That fact is important. It reminds you of what I have impressed upon you several times, that when the chest is changed in consequence of rachitical deformity, when it is no longer elliptical, but becomes triangular or quadrangular, then the heart beats against a larger surface of the chest wall, and the shock is more extensive and stronger. That is what we find here, a heart located not in an elliptical chest wall, but behind a chest wall which is sunken in; therefore it must be felt more strongly than under normal circumstances. Now, this is a heart in which you are very liable to diagnosticate hypertrophy, simply because the percussion dulness is very extensive and the impulse strong.

This baby is decidedly rachitical. The doctor has pointed that out in his history, and I shall not go over the ground again. But let us look at the baby and see what we can do for its misshapen back. As the baby lies on its belly, we see that the vertebral column deviates to the left, that there is a protuberance in the lower dorsal region, and that the ribs stick out and form an angle near the spinal column on the left, looking as though they were fractured, while the left side of the chest wall is drawn in. As a rule, when you have a misshapen chest in rickets you know how it came about. The ribs become softened by the rachitic process, the muscles are not very strong, inspiration is diminished a little in con-

sequence of weakened muscles, yet the weight of the atmosphere remains the same and tends to press the ribs in. So it is that in some rhachitic children we find grooves all around the chest, especially along the insertion of the diaphragm; in others there is a compression of the sides of the chest, giving it a triangular in place of an elliptical shape. But in this case we have a good deal more. If we try to explain it by the pressure of the atmosphere alone, why is it that there is such marked depression on one side and not on the other?

You might reply that it is the result simply of the fact that the bones are softer on one side than on the other, causing the bones to give way on one side more than on the other. That is possible, but there is another possibility. The condition is sometimes such in rickets that partial fracture of the bones easily takes place. Rhachitical bony deposit occurs under the periosteum, absorption of the normal bone takes place, and though the bones remain normal for some time inside, it is abnormally soft outside. On cutting through such a bone we find that the periosteum is very thick and succulent,—hyperæmic; and the upper layers of the bone are soft. When such a bone fractures, the fracture does not go through the periosteum simply because the periosteum is not hard enough. You can fracture a stick, but you cannot fracture a piece of cotton flannel. The periosteum of a formed bone is hard, and may be fractured, but in the rhachitical bone it is soft, hyperæmic, very thick, and the bone may fracture inside while the periosteum remains intact. You have, then, to deal not with a complete fracture, but with a so-called green-stick fracture. The name green-stick fracture, which has been applied to this form of fracture, is very good. When you break a green stick you fracture a large number of the hard fibres, but the peel remains and sometimes is not injured at all. So it is with the periosteum.

In this case the rib here is sticking out, and feels exactly like a fracture which has badly united, and the question is, What is it due to? It is barely possible that the atmosphere presses with greater effect on that side because there has been more rhachitical softening; but it is also possible that there was a traumatic cause for it. A baby is naturally taken up by being held under the arms, a little more pressure is made on this side than on the other, and if the bones here were the softer, fracture or infracture might result.

It is a peculiar symptom of rickets, and now and then it will attract your attention and lead to the diagnosis, that the child is quiet as long as it is in the cradle, but as soon as it is taken up it screams. That is a common symptom, and it



means that the ribs are getting soft, succulent, hyperæmic, and the patient cannot stand pressure, so that as soon as you touch it it screams out. Sometimes this is really the first tangible symptom. It may be seen in fat and apparently robust children who afterwards develop all the symptoms of rickets.

What shall we do with this baby? At all events there is one thing which must not be done. That is, the baby must not be carried on the arm. It must not be carried at all unless on a hard pillow. If you carry it on the arm you will certainly hurt it. It must have time to strengthen its bones, and then it may be taken up again. It is even possible that a good deal of this deformity will heal again by expansion of the lungs. It is wonderful to see how often such a deformity will get well by simple expansion of the lungs, provided the lungs themselves remain well.

I should propose, then, to put the child in as comfortable a bed as may be had; give animal food; also give phosphorus. It might take one-two-hundredths of a grain, beginning with three doses a day, after a while four a day. It may also take some iron, either in the form of the syrup of the iodide of iron (seven or eight drops three times a day) or double the quantity of the syrup of the hypophosphite of iron, or of the hypophosphites of the pharmacopœia with iron. Animal food is of absolute necessity. The fact that the baby has so far been fed on breast-milk and has done so poorly would prove that this food should be dispensed with. There are a good many children which will not thrive on their own mother's breast-milk, but do better with a nurse, while some do better on artificial food. When a baby, which has been nursed five or six months, has rickets, it is surely time to give it artificial food. An unwise thing now to do would be to give unmixed cow's milk. Cow's milk is not woman's milk. It is physically and chemically different. This child cannot be fed on cow's milk alone; it need be only one of the ingredients. Again and again I have insisted upon this fact, that, while cow's milk is one of the proper foods for infants which do not thrive on mother's milk, yet they would do better if they also received some cereals, say oatmeal and milk or barley and milk. I insist upon this because it has been claimed lately that the cause of all the diseases which have come to babies fed on cow's milk is not the kind of milk, but the spoiling of it. It has been claimed with all the enthusiasm of shortsightedness that sterilized cow's milk is as good as—perhaps better than—breast-milk. Now, sterilizing cow's milk does not change it into human breast-milk. It means nothing else

than destroying the germs which proliferate in the milk, and absolutely nothing else. It is still cow's milk. Sterilization is a great advantage, but to believe that this will cause cow's milk to assume the qualities of human milk is the result of enthusiasm if nothing worse. If this baby is to have cow's milk, the milk should be boiled and mixed with barley-water or oatmeal-water. It ought to have peptones, one or two teaspoonfuls of Rudisch's or some other beef peptones a day. It might take for a while half a teaspoonful of whiskey a day; it might have two or three drachms of the officinal wine of pepsin daily to aid digestion of albuminoids. While that is all I should do medicinally, yet without fresh air the child will not get well. It would not do to give it cod-liver oil during the summer. The oil would become rancid and cause diarrhœa. Very few children bear cod-liver oil during the summer.

#### AMYGDALITIS ("TONSILLITIS.")

You will remember the case of enlarged tonsils which you saw here last week, in which there were a number of white follicles on top filled with a muco-purulent substance. In the boy before you to-day you will find two enlarged tonsils, both of them a little red, and a number of white spots on them, some of them round and covered by mucous membrane, it seems, and some of them longer and apparently a cicatricial process which has taken place some time previously.

I will now see whether I can get a probe into these follicles, for, you will remember, I told you last week that now and then you can run a probe into such a follicle a quarter of an inch, sometimes half an inch. I have here introduced the probe into one of the follicles three-quarters of an inch, and I have not the slightest doubt that there are a number of such crypts. Having been over this subject partially last week, we will now proceed to the question of treatment.

What would you do to cure such a case, one in which there are long, deep crypts which fill up with mucus and pus and form a suitable place for the deposit of diphtheric virus, and in fact give rise sometimes to diphtheria, and also to local irritation and abscesses? Such patients frequently have once or twice every winter abscesses by which a good deal of substance is destroyed, but still leaving enough tonsil to give rise to new attacks.

How would you cure such a case of constant so-called amygdalitis with or without chronic pharyngitis? Yes, remove the tonsil. You can do that in one of two ways, either cut the tonsils off, which is the simplest process, or, where that is refused, burn out the follicles one by one with the galvano-cautery, under the influence of cocaine. But to de-

stroy the two tonsils in this case in that manner would require at least eight or ten sessions, consuming a good deal of time. Not every patient would return so often for the repetition of the treatment, and you would get the name of not having been able to cure the case.

In the patient before you the tonsils should be exsected, which would end his complaints, present and future. If left as it is, there will be recurrent attacks like the present, and liability to diphtheria during every new epidemic.

#### ASTHMA.

This little girl, five and a half years old, has had asthmatic attacks since her sixth month. The attacks occur mostly in the night, about two or three o'clock. What asthma is, I hope you know. It is not identical with either pneumonia or bronchitis, nor with any of the inflammatory diseases. Asthma means sudden attacks of dyspnœa of a nervous character, coming on at longer or shorter intervals, regularly or irregularly. But the nervous character prevails. There is seldom any fever connected with it. There may be incidentally a feverish disease, such as bronchitis or pneumonia, but asthma itself is not attended with fever.

The attacks may be the result of a number of different conditions, therefore there is no such thing as an asthma cure. Yet a number of men have got rich on so-called asthma cures. It is difficult to make a diagnosis of the condition which gives rise to the asthma in many instances. While asthma is a nervous disease, yet there are points connected with its history which resist, so far as the etiology, pathology, and therapeutics are concerned, all attempts at classification. I can best illustrate that by the fact that a climate which is good for one asthmatic is poison for another. There are cases, no matter whether in child or adult, which get well on the sea-shore, while others get well on the mountains, and others which get well in the worst dens of city life. There are persons who have asthma in the mountains, but recover when they return to their bad quarters in the city, and *vice versa*.

Asthma in little children is not so very uncommon. Let me run over the causes, although every case must be studied on its own merits. In very small children there are asthmatic attacks simply as a result of acute or chronic bronchitis. A number of children suffering from bronchitis will have sudden attacks of dyspnœa after they have been asleep for a time. When they awake the dyspnœa continues. When they are allowed to breathe deep, cry a little, take some food or drink,



the attack passes by, to return when they fall asleep again. Other children will have attacks when suffering from chronic bronchial catarrh. This is not infrequent in rachitic children. One of the symptoms of rickets is chronic catarrh,—sometimes complicated with swelling of the glands of the neck and mediastinum. Such a chronic catarrh will frequently lead to acute bronchitis, and now and then in cases of this kind asthma shows itself. And now and then asthma occurs in cases which have only hypertrophy of the tonsils. Children of this class are mouth-breathers, particularly when asleep. They have a dry mouth in the morning, and whenever they awake from sleep. There is not sufficient moisture to moisten their throats, and some wake up in the night with a cough, some with an attack of asthma, which will pass by when they take some liquid.

Another cause of asthma is one which is very common in the adult. When an adult has had bronchitis a number of times it is not only the mucous membrane of the bronchi which is affected, but the interstitial tissue as well. Then you have no longer to deal with simply a chronic bronchitis, but with a peribronchitis. Peribronchitis, when repeated, will lead to induration, to cicatrization, to falling in of the chest, and not infrequently in adult cases you find a depression of the upper part of the chest, usually on the right side, which gives rise to dulness, to diminished respiration, sometimes even to a little bronchophony, and is very frequently mistaken for incipient phthisis. When the history of such a case is followed up you will finally come to an interstitial pneumonia or a persistent peribronchitis contracted in early life. Such children and adults are apt to have asthma, particularly those in whom this peribronchitis is complicated, as it frequently is, with emphysema. Indeed emphysema and peribronchitis are the most frequent causes of asthma both in children and in adults.

But there are other forms of asthma. A number of cases in the adult cannot be treated by methods directed to the respiratory organs or nerves, but by treating the alimentary tract. A number of adults, and children also, have asthma from dyspeptic causes,—heartly eaters, fast eaters, people who suffer from constipation, who suffer from acid gastric catarrh, from flatulency, are very apt to have asthma, and are very likely to be cured of it when their intestinal tract is thoroughly cleared. According to our medical ancestors,—*qui bene purgat bene curat* ("whoever purges well cures well").

Then there are a number of cases of asthma which are the result of a dyspeptic disorder of a different kind altogether.

It appears that now and then certain kinds of food act upon the gastric ramifications of the pneumogastric, that the cardiac branches are also affected by reflex, and asthma results. These are more complicated and more serious cases than those I have just spoken of, and are very apt to last a good while longer. They require a great deal of attention given the digestive process, and not infrequently resist all treatment. At least such attacks of asthma are very apt to return.

Other cases which were regarded as incurable formerly are those which result from distant reflexes. Undoubtedly you have heard in your lectures of the influence of nasal reflexes, particularly in their relations to asthma. There can be no doubt that a number of nerve affections, hemicrania and asthma among others, are the result of the irritation of the trigeminus on certain parts of the nasal mucous membrane. Whenever there is that irritation, asthma may be the result, and the only treatment of the case consists in destruction of this irritable part of the nasal mucous membrane.

So the causes of asthma are manifold in the adult and in the child, for there are none of these remarks but which may be applied to the child as well as to the adult.

A good many years ago I saw a case which was considered impossible by the very man who has brought the theory of nasal reflex asthma into prominence,—Hack, of Germany. He insisted that, although there was an irritable area on the nasal mucous membrane which might give rise to asthma, it was impossible for a polypus ever to give rise to the affection. But that was a mistake. When a polypus irritates the normal mucous membrane, or is found near the irritable parts, it will give rise to asthma. But when there is long-continued inflammation the mucous membrane becomes atrophied sometimes, and then the presence of a nasal polypus will not give rise to nerve irritation, for the nerves are shrunken with the other tissues. I have seen a case of asthma in a boy five years old whom I had treated a long time for peribronchitis and for bronchitis, but did not succeed in relieving the asthma. It was found there was a polypus. This was removed, unfortunately not by me, who had not detected it, and from that hour the asthma had gone. Now, that is a case which certainly proves to my satisfaction that asthma may sometimes be produced by a nasal polypus and absolutely nothing else.

As to treatment, in a great many cases the attacks are of a nervous kind, hence antispasmodics and neurotics are indicated for the attacks. Opiates, subcutaneous injection of morphine, a dose of morphine and chloral, or of chloral alone, will, as a rule, suffice to do away with a single attack, but it would be

necessary to repeat it, repeat it, repeat it, which is more than you ought to do. When there is a nasal reflex, that certainly ought to be removed. Chromic acid or galvano-cautery is there indicated. When there is a peribronchitis, you ought to remove that as well as you can. There the iodines will do best. Iodide of potassium will there act partly as an absorbent, partly through its influence upon the circulation. It may be given alone, or with some bromide of potassium, and may be continued a long time. The majority of cases of bronchitis will bear the iodides much better than the average patient. Where there is a bronchitis the usual treatment for that disease will be called for.

On examining this child's chest we find that there is some evidence of rhachitic deformity, the sternum being pushed out, and a groove along the junction of the ribs with the cartilages, changes which probably took place when the child was less than a year old. The upper lobe on the left side is the seat of some râles and diminished respiratory murmur; there is some dulness, due to an old inflammatory process, in the bronchial walls and interstitial tissue. The impulse of the heart is not strong, the area of dulness limited, and the heart-sounds are less audible than normal. The explanation is that there is something between the heart and chest walls; there is emphysematous lung tissue. We have then a case of asthma which depends on peribronchitis, chronic interstitial pneumonia, and emphysema, all being conditions commencing probably as a catarrhal bronchitis. So this would be a case in which the attacks ought probably to be fought with neurotics, while the curative treatment would consist in iodide of potassium and occasional measures directed against the bronchitis. It is important that the chest wall, which now has a tendency not to grow, should be expanded. You can do that by causing the child to play, to run, to take gymnastic exercise, particularly of the lungs; the best gymnastic exercise for emphysematous people is to insist, not upon inspiration, but upon expiration. Make them expire as much as they possibly can. But if you simply tell them to do it they will not, for it is not amusing. It is therefore best to advise them to buy a cheap spirometer, so that they can see how much they gain from day to day or from month to month. It is a plaything which will encourage them to continue the exercise.



## Current Literature.

### I.—HYGIENE AND THERAPEUTICS.

**Morrison, A. E. :** *The Surgical Treatment of Empyema.* (*Edinburgh Medical Journal*, August, 1889.)

Twenty cases are reported, the ages ranging from eight months to forty-three years. Of these all but one, a starved infant of eight months, recovered. In five cases prior to operation pus had been expectorated. In one a cure was effected by this means alone, without operation. In one alone, after a slow and tedious convalescence, the pus was absorbed without operation. Two cases were complicated by phthisis, one of which died after cessation of discharge from the pleural cavity. In two instances excision of a portion of a rib was required.

In performing the operation the strictest antiseptic precautions were observed. The skin incision was vertical, the incision through the muscles horizontal, along the upper border of the seventh rib. Injection of the cavity was in no case employed.

The following conclusions are drawn :

1. In the diagnosis of empyema the only certain sign is obtained by the exploring needle, and this, carefully used, is perfectly safe.

2. Antiseptic incision,—the wound being sufficiently large to admit a full-sized drainage-tube in the posterior axillary line, and made with the patient on his back,—drainage, and careful dressing are all that are required.

3. The time for healing in uncomplicated cases should not exceed four weeks.

4. Double openings, irrigation of the pleura, and excision of the ribs are unnecessary and harmful if the case be seen before an opening has formed through the skin.

**Gemmell:** *Ouabain in Pertussis.* (*British Medical Journal*, April 26, 1890.)

Ouabain is an alkaloid obtained from a plant used as an arrow poison by the natives of East Africa. It occurs in colorless crystals, has a slightly bitter taste, and dissolves sparingly in cold water. It has been employed in the treatment of

forty-nine cases of whooping-cough. The results are reported as gratifying. The initial dose for a child of five years should not exceed  $\frac{1}{1000}$  grain repeated every three hours. It may be cautiously increased to  $\frac{1}{250}$  grain. At one year the dose should not exceed  $\frac{1}{2000}$  grain.

**Jones:** The Mouth in Imbecile Children. (*Journal of Mental Science*, April, 1890.)

The author believes that high palates occur mostly in two classes of cases,—the Mongolian and the microcephalic. The former type embraces about five per cent. of all imbeciles, and is very distinctive. The lower incisors are irregular and rarely meet the upper in a line. The wedge-shaped mouth is common, the teeth being arranged in two converging lines, which meet at an angle. This is usually accompanied by a high and vaulted palate.

**Cheyne:** The Treatment of Incompletely-Descended Testicle. (*British Medical Journal*, February 15, 1890.)

Operations for this condition frequently fail, owing to retraction of the cord drawing the testicle against the external ring, in a position but little better than that which it formerly occupied. To obviate this, the author has devised a small triangular frame of wire to fit into the perineum and over the pubis. At the apex of the scrotum a bar is carried across from the sides of the triangle. The instrument is retained in position by cords. After freeing the testicle and cord, they are brought into the scrotum and a stitch passed through the cord and tied to the projecting bar. Thus tension is kept upon the cord until danger of retraction is passed.

**Flood:** Incubation of Rôtheln. (*British Medical Journal*, March 8, 1890.)

In three cases it can be stated positively that the rash appeared on the fifteenth day after a single exposure. The stage of invasion is very short. Enlargement of the lymphatic glands of the neck is a frequent premonitory symptom, and the only one.

**Adams:** The Treatment of Congenital Displacement of the Hip-Joint by Complete Recumbency with Extension for Two Years. (*British Medical Journal*, February 22, 1890.)

This subject is treated in a lengthy illustrated article. Six cases have been treated by the author with extremely satisfactory results. The object of treatment, when the case is un-

dertaken at a sufficiently early period, is to present the gradual displacement of the head of the femur by elongation of the capsular ligament, which takes place when the child begins to walk. Treatment, according to the author's plan, is divided into two stages. In the first, complete recumbency is maintained, with slight extension, and immobility as complete as can be sustained with comfort, and continued night and day for at least eighteen years. For this purpose the author has devised a special extension mechanism and movable couch. During the second stage, extension is maintained with mobility during progression, without the weight of the body being thrown upon the affected limb. This can be accomplished by an instrument similar to the ordinary hip-joint brace. It should be worn a year. In older children the same treatment is to be carried out. As good results are not expected as in younger children, but even up to five or six years, much improvement may be looked for.

**Gooch: Report of an Outbreak of Diphtheritic Tonsillitis at Eton College.** (*British Medical Journal*, March 1, 1890.)

This report presents some unusual and interesting points. The exudation was confined for the most part to the tonsils, the graver symptoms of diphtheria were absent, but the disease differed entirely from ordinary follicular tonsillitis.

Thorough investigation showed nothing in the drainage or water-supply to account for the epidemic; attention was then turned to the milk-supply. The milk was derived from fourteen sources. The disease occurred, with a single exception, in families supplied from one farm. They had nothing else in common. No fault could be found with the stables, water-supply, or care of the cows. None of the cows showed any disease, nor was there any sick person about the farm. The cows were pastured in a lot adjacent to a sewage farm of a neighboring town, and crude sewage had poured into water which the cows drank. The cows were transferred to another lot, and the epidemic suddenly ceased two days later. In one house supplied partly by this milk, containing forty boys, no case occurred. This is explained by the fact that this milk, delivered at night, was used for the coffee in the morning and was boiled. In another house, those using this milk contracted the disease, while those in the nursery, using milk from another source, escaped. One master who used only boiled milk escaped; another using the same unboiled had tonsillitis.

From these investigations it would appear:

1. That infected milk was the cause of the disease.



2. That water in which pails, etc., were washed was not at fault.

3. That disease-germs can pass through the system of the cow and be excreted in the milk in an active condition.

4. That boiling the milk destroyed the vitality of the germs.

5. That the disease was distinct from diphtheria, scarlatina, and follicular tonsillitis.

6. That the disease was non-infectious, as no person took it who had not drunk the milk, although in close communication before isolation.

Warner: Scientific Study of the Condition of Children in Schools. (*The Lancet*, April 5, 1890.)

In this paper the author considers the possible value of accurate observation of facts seen in children in schools as a means of aiding the solution of educational problems. There is, at present, but little accurate scientific observation of children in schools from the point of view of ascertaining their special adaptations to and requirements in education.

Looking upon a body of children as pupils in a school, we would wish to classify them according to their (1) development; (2) nutrition and physical health; (3) brain condition. The physical signs of these may be learned by any observer; but, like all new physical signs, they require some moderate degree of application to recognize them.

The effects of education and various modes of teaching upon the brains of the children can only be determined by actual observation in the schools. There is no body of facts founded upon extended observation of school-children showing their condition and its bearing upon the adult population of the next decade.

What is wanted is a careful investigation, conducted by observation, of the children along definite lines as well as by inquiry of the teachers. At present we have no standard to go by, no average of the conditions we desire to remove. The study of pathology and clinical diagnosis must precede scientific treatment, and we need some exact knowledge of the condition of samples of the school population before science can take its proper place in directing education, or give due service to the state by advice upon many of the practical problems put forward by the educationist for solution.

Suckling: Congenital Infantile Laryngeal Stridor. (*The Lancet*, March 15, 1890.)

The child was one week old. The stridor had persisted from birth, and was persistent, though worse at times. The

mother stated that it was worse when the child was asleep, and when it was made to cry. There were no signs of syphilis. Dr. Suckling had seen several such cases. He attributed the stridor to some congenital abnormality in the larynx, possibly a recurved epiglottis. Such cases are unaffected by treatment, and the stridor gradually disappears.

**Curgenven: Treatment of Scarlatina.** (*The Lancet*, April 5, 1890.)

Dr. Curgenven claims that the oil of eucalyptus in scarlatina supersedes all other methods in curative and preventive measures. The remedy is perfectly innocuous, a powerful germicide, and extremely volatile. It was given internally in the form of Tucker's eucalyptus antiseptic; the clothing, sheets, pillows, etc., were saturated; the surface of the body sponged twice a day; and the floors, walls, and furniture frequently sprinkled till the air was impregnated.

The results obtained by the author were the immediate arrest and cure of the disease.

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## II.—MEDICINE.

**Ollivier: The Headaches of Growing Children.** (*Med. Age*, 1889, vii. 557.)

Many of these cases are due to eye-strain, anæmia, hysteria, etc., and as a general thing it is often possible to prevent these injurious influences from effecting their mischief. In fine, there are certainly more headaches during the season of growth than at any other time; it is, however, doubtful if there is a headache of growth, properly so called.

**Stern: Diabetes Mellitus in Children.** (*Arch. f. Kinderh.*, xi. 2, and *Med. Monatsh.*)

The author was able to find only one hundred and seventeen recorded cases of diabetes mellitus in children, of which number, seventy-five were published subsequent to 1876. As to etiology, heredity was found to be an important consideration, the parents, in these cases, being either diabetic or neuropathic. The disease was also a sequel of other diseases, having been observed after gastric catarrh, morbus maculosus Werlhofii, typhoid, malaria, and measles with furunculosis. Other causes were starchy diet, taking cold, and concussion of the brain. The initial symptoms varied, and the beginning of the disease was seldom noted. Occasionally were noted emaciation, peevish voice, enuresis, and intense hunger. Polyuria was the

chief symptom, and the quantity of urine passed was sometimes enormous. Nursing infants would wet twenty to twenty-four diapers daily; a girl fourteen years old passed in the course of six weeks a daily quantity of urine which increased from fifteen hundred to four thousand cubic centimetres; a boy fifteen years old passed fifty-two hundred cubic centimetres daily; two other boys, of fifteen and eleven, passed six litres each daily. The specific gravity varied from 1008 to 1042. The quantity of sugar varied between five and ten per cent. Symptoms additional to those already mentioned were weakness, sweating, nose-bleed, furuncles, abscesses, cataract. The digestive organs suffered greatly on account of the drain upon them. In many cases there was a perceptible odor about the person of vegetables, apples, or wine. In others there were carious teeth, loss of appetite, vomiting, constipation, and in one case diarrhoea. When the respiratory organs became affected, death usually followed. Nothing definite could be concluded from the pathological anatomy of the cases. The duration of the disease varied from two days to five years. In six cases the disease was fatal within a month, in seventeen it was fatal within a year, in ten it continued more than a year, none of the cases being cured. In seventy cases there was recovery in fourteen, improvement in four, and death in fifty-two. The dietetic treatment is most important. Sour milk subjected to the natural process of fermentation, with the addition of glycerin or mannite, with three parts of boiled water to one of milk, was given to nursing infants with great satisfaction, the sugar disappearing from the urine and remaining absent. With larger children the diet was composed of soup, roast meat, raw eggs, cheese, and sour milk; bread, sugar, and starchy food being prohibited. Cod-liver oil and iron were also given. The alkaline carbonates and bicarbonate of soda were found useful, and large doses of mineral acids were given before breakfast and dinner. Other preparations which have been of use are acetate of iron, sulphate of iron, and salicylate of soda.

A. F. C.

**Kormann: Influenza in Children.** (*Wien. Med. Blätter*, Nos. 51 and 52, and *Rev. Mens. des Mal. de l'Enf.*, April, 1890.)

The symptoms of this disease, as it appears in children, differ in certain essential points from those which occur in adults. In children, at the beginning of the disease, fever and cerebral symptoms are of primary significance. Rudimentary forms of the disease are frequently manifested by general malaise, lassitude, want of activity, and disinclination



to play. In well-developed cases the beginning is usually as abrupt as in adults, but it rarely happens that there are marked chills; instead there are chilly feelings alternating with feelings of heat. In some cases the chilliness is accompanied with convulsions, and the latter is succeeded by drowsiness, which may last twenty-four hours or more. Very young children are apt to be very cross and cry at every change which is made in their position. Older children complain of pains in the head, in the lumbar region, and in the limbs. To these symptoms may be added an intense dulness, which may extend to loss of consciousness, total loss of appetite, paroxysms of cough, and vomiting or diarrhœa. If the disease assumes a grave character, death may result within forty-eight hours. In the majority of cases the pathological process is limited to the mucous membranes, the respiratory passages being first attacked, after which follow conjunctivitis, epiphora, difficulty in deglutition, deafness, and possibly a dry cough. With very young children there may be dyspnœa of a threatening character. The cervical ganglia are usually the seat of more or less marked swelling. In addition there may be psychical excitation or depression. After three to six days the nervous symptoms gradually improve, sometimes there is a sweat which marks a crisis, and the dry cough gives place to more or less abundant expectoration. The general feebleness disappears slowly, and convalescence may last eight or ten days. Complications, either in the course of the influenza or during convalescence, are more frequently observed in children than in adults. In the order of frequency there may be chronic bronchitis, caseation of the bronchial glands, acute miliary tuberculosis, and tubercular meningitis. The most common of the acute complications are pneumonia and croupous bronchitis, which are always ushered in by chills and perhaps by convulsions also. There is almost always hyperæmia of the Schneiderian mucous membrane in this disease, which may amount to cyanosis, a grayish, adherent deposit being present. The same changes exist upon the entire buccopharyngeal mucous membrane and extend to the small ramifications of the bronchi. When there are complications they manifest themselves by their special anatomical modifications. The organs of the digestive apparatus rarely present profound changes, being habitually limited to a catarrhal swelling of the mucous membrane of the stomach, or a reticular injection of the same. In some cases also there is swelling of the Peyer's patches and the closed follicles. In most cases the spleen is not swollen. With children, disorders of the nervous system are more marked in this disease than with adults.

The hyperæmia of the Schneiderian membrane may be the cause of intense pain in the head. Not infrequently there is localized hyperæsthesia upon the scalp or face, or it may extend to the entire surface of the body. There may be local or general convulsions, trembling of the tendons, and of the extremities. Upon the skin there may be urticaria, a scarlatiniform exanthem, rubeolous spots, and different erythemata following vaso-motor troubles. Dyspnœa may be excessive, and not related to lesions of the bronchi but to a neurosis of the bronchial muscles and the diaphragm. It may be paroxysmal, intermittent, and may amount to orthopnœa, with intense præcordial anxiety. In some cases gastro-intestinal troubles predominate. The prognosis will vary with the character of the epidemic; in general it is grave for young infants. The treatment should be symptomatic, especial attention being paid to the general condition and to catarrhal manifestations.

A. F. C.

**Charcot: Etiology of Infantile Spinal Paralysis.** (*Rev. Mens. des Mal. de l'Enf.*, May, 1890.)

Infantile spinal paralysis should be classified in the neuro-pathological family, and the author has frequently observed the neuropathic heredity with those who suffer from it. If one investigates the antecedents of these patients, one almost always finds nervous affections, including hysteria, epilepsy, or vesania. This fact contradicts, however, a recent observation of Cordier, of Lyons, in which the disease occurred as an epidemic. In one of Charcot's clinical patients fatigue played an important etiological rôle, for he was seized with delirium three days after such fatigue, and the following day one of his legs was paralyzed. It was remarkable that the leg alone was attacked at the beginning, there having been no period of regression, during which the paralysis left other parts to appear in the leg. Also for fifteen days subsequent to the first accident the patient suffered with severe pain in the sciatic, which is a rare phenomenon. Complete loss of all electrical reaction indicated that there was no hope of cure. The second patient was seized with chills without apparent cause, followed the same evening by paralysis of the right lower limb. The following night the left leg became paralyzed, and then the arm, though only slightly. In this case also there was retention of urine for several days.

A. F. C.

**Koch: Purpura in Children.** (*Jahrb. f. Kinderh.*, xxx. 4.)

Three varieties of extravasations may be differentiated in purpura. In one there are livid red or bluish spots as large

as a pin's head or a little larger distributed over the skin, and they do not disappear with pressure. In another there are dark-red and bluish spots about the size of a cherry-stone. In addition there are the small spots of the first variety. These spots are very abundant and lie near one another. The patient looks as if he had been ornamented with a painter's brush. In the third class there are large extravasations in the underlying connective tissue. They have a bluish appearance and may show fluctuation. The severity of the case is governed by the character of the eruption. In the last-mentioned variety there may also be hemorrhages from the oral and nasal mucous membranes, less frequently from the intestines and kidneys. The condition produced by flea-bites may resemble purpura, but the spots in the latter are more diffuse, they may cover the entire body. Usually there are fewer spots upon the abdomen than upon the face, neck, breast, and extremities. Also there are fewer spots upon the back than elsewhere. The author observed that in most of his cases the patients were poorly nourished and lived in damp and cold dwellings, but it was also present in well-nourished children and in those who lived in good hygienic surroundings. It is less frequently accompanied with pain in children than in adults. In mild cases there is seldom a recurrence, in severe cases recurrence is the rule. The treatment consists in rest, bandaging with flannel, nutritious diet, ergot, and quinine, lead, iron, or alum preparations. Warm baths are to be avoided.

A. F. C.

Pitt: Dilatation of the Heart at the Time of Puberty, and its Common Occurrence in Girls. (*Arch. f. Kinderh.*, xi. 4.)

The author desires to direct attention to a certain group of symptoms which not infrequently occur at the time of puberty, and to a plausible explanation of the same. He has in recent years observed eight cases, including a boy of fourteen, five girls between ten and fourteen, one girl at sixteen, and one at eighteen, in which these symptoms were prominent. Most of them had grown tall very rapidly, and in none of the girls was menstruation normal. The symptoms consist in debility, want of energy, palpitations, dyspnoea after exertion, and disagreeable sensations in the region of the heart. In most of the cases there was weak pulse, diffuse heart impulse with a weak first sound, and an accentuated second pulmonary tone. In two of the cases there were functional systolic murmurs. There was hardly enough dilatation in most of the cases to suspect insufficiency of the mitral valve. These phenomena



may be made to disappear entirely within a few months by the use of appropriate treatment, which should consist of regular physical exercise without over-exertion, a nap for at least two hours every day, and the internal use of iron and arsenic. The food should be abundant and nutritious. The explanation of these phenomena is to be found in the great changes which take place in the heart and great vessels at the time of puberty, as shown by the measurements which were made by Beneke. During the first years of life the heart gains eighty per cent. in volume, while between the seventh and fourteenth years it is only eight per cent. At puberty it again gains eighty to one hundred per cent. in volume. If the changes incidental to puberty take place in one year, the heart doubles its volume in that time; if in two years, the increase in volume occupies two years of time; if in five years, the increase in volume would be only twenty per cent. yearly; in a word, the development of puberty is accompanied by a *pari passu* increase in the volume of the heart. The conclusion from the foregoing is that when the heart is not in condition to develop rapidly, the phenomena of puberty must be protracted. The consequences of the great efforts which are placed upon the heart at this period are manifested in the common occurrence of a slight degree of dilatation and in deficiency of heart-energy, which is especially noteworthy in individuals who grow rapidly at the time of puberty. In such persons the changes of puberty are often prolonged, or are incomplete, which is a direct consequence of the unsatisfactory increase in the blood-pressure. Symptoms of heart weakness are not generally found in children who have passed the experience of puberty quickly. Girls are more apt to suffer than boys, because between the ages of eleven and twelve they are weaker than boys. Between the ages of thirteen and fourteen they overtake the boys in point of physical vigor, while between fourteen and fifteen the boys again gain the ascendancy, continuing to grow, while the majority of girls do not.

A. F. C.

**Knopf:** Pericarditis in Childhood. (*Arch. f. Kinderh.*, xi. 4.)

Ten cases of this disease in children are reported. Three were under one year of age, three between one and two, and the others between six and ten. Among the causes of the disease during the nursing period of life are mentioned septic-pyæmic processes proceeding either from the mother or the umbilicus, also chronic diseases, especially tuberculosis. It may also be due to inflammatory processes in the pleura, lungs,

ribs, sternum, vertebral column, bronchial or mediastinal glands, thymus, and œsophagus, likewise to inflammation in the abdominal viscera and peritoneum. It is impossible to explain the origin of diffuse idiopathic pericarditis. In six of the author's cases the cause was inflammation of the pleura and lungs, in one it was chorea, in two it was scarlatina, and in one the cause could not be traced. While in adults and older children pericarditis is manifested by weakness of the apex beat, the latter sometimes being entirely imperceptible, as the heart is forced over towards the left side and the base turned downward, a friction murmur being also perceptible, in very young children all these symptoms are absent. In seven of the author's cases the result was fatal, and the autopsies revealed only a moderate quantity of exudate, not enough to affect the sounds of the heart, its position, or its relation to neighboring organs. It was moderately thick in consistency, contained no fibrin, and was not sufficiently abundant to cause friction sounds. Though the physical signs referred to are often present in older children, they vary as to their appearance, so that great care and watchfulness are necessary lest pericarditis be overlooked. A case is narrated in which such was the case until the symptoms became so urgent that a careful examination revealed the actual condition. The treatment may consist of local applications of ice and the use of large doses of digitalis. Should the pericardial folds become agglutinated, the condition would be a very dangerous one, the heart-muscle becoming more or less paralyzed, and dropsy from stasis becoming more or less extensive. The symptoms which are the most dangerous in this disease are a small, rapid pulse, subnormal temperature, œdema of the cheeks, eyelids, and lower extremities, and slight albuminuria.

A. F. C.

**Snell: Mastoid Disease in Connection with Ear-Trouble.** (*Arch. f. Kinderh.*, xi. 4.)

According to this author, disease of the mastoid process is, in general, an affection accompanying either an acute or chronic disease in the middle ear, in which a definite and thorough line of treatment is called for. Unfortunately, such a plan is not always pursued, and the patients must be the worse to a corresponding degree. Since, in most cases, the chief cause of the disease consists in the retention of pus in the ear, it becomes of first importance to allow it to escape freely. The indications, therefore, are paracentesis of the drum membrane at the proper time, dilatation of an existing perforative opening, the use of Politzer's method, so that permea-

bility may be established through the auditory canal as well as through the Eustachian tube. In a case which is narrated and in which this treatment was followed, as the pus was evacuated the dizziness and pains, from which the patient had suffered four years, disappeared, and complete healing resulted. Another case was in a girl fifteen years old, who had suffered for two years from a frequently-recurring affection of the ear with violent pains, including pain in the neck. When the pus was evacuated the pain ceased, but began again when the pus no longer flowed. At the mastoid process and on the neck there was evident only a slightly red and sensitive tumor. The external auditory canal was swollen; there was permeability of the Eustachian tube and perforation of the drum membrane. Under the use of cataplasms and leeches, cleansing of the ear with warm boric-acid solution, and Politzerizing the swelling disappeared and the pain ceased. In addition to the means which have been recommended, applications of iodine or of belladonna may be used. The swelling in some cases is excessive, extending over the head and neck, and the pain is sometimes attended with delirium, fever, etc. If these measures which have been referred to are insufficient, the suppuration extending into the drum cavity and the mastoid cells, the swelling increasing and the ear-muscles standing out prominently from the head, while the sensitiveness becomes ever more acute, then must operative measures be undertaken. An incision (Wilde's) may be made behind the ear, and the mastoid process may be perforated to give exit to the accumulated pus and prevent closure of the wound, through which a portion of diseased bone will probably come eventually. The incision should be made as far forward as possible, just behind the insertion of the auricle. The wound should then be dilated with a sound or a knife to find out the condition of the bone.

A. F. C.

**Brown:** Severe Chorea terminating Fatally from Acute Paralytic Distention of the Stomach. (*The Lancet*, April 19, 1889.)

A girl, aged sixteen years, has suffered from acute rheumatism. Six weeks later she developed severe chorea; at the same time she became melancholic and emotional. She had had no previous attack; and the present one was attributed to anxiety about domestic matters.

There was a loud musical systolic bruit; and considerable constant temperature.

The chorea became worse in spite of treatment; delirium supervened. The pulse became very weak. It was almost



impossible to induce sleep. Then she became better as to the chorea and delirium.

Diarrhoea and vomiting then came on. There was slight abdominal distention.

Three days later she became profoundly collapsed. The abdomen was greatly distended. She died twelve hours later. There had been no vomiting for the last twenty-four hours, and no urine had been passed.

*Necropsy.*—On opening the peritoneum a cystic tumor presented itself; and on introducing the hand this was found to be a part of an enormously-distended stomach, which occupied the entire abdominal cavity, extending from the diaphragm, on the left, to the right iliac fossa. The intestines were quite empty and collapsed. The wall of the stomach was very much thinned. There were several brownish-red patches in the mucous membrane, as though there had been slight hemorrhage into its substance. The mitral valve of the heart showed beading of recent endocarditis.

*Remarks.*—Acute paralytic distention of the stomach causing death in a few hours, with symptoms of profound collapse, is a very rare and very interesting pathological condition. Very few cases have been recorded.

**Blackader, A. D.:** A Case of Ataxia in a Boy of Twelve Years. (*Montreal Medical Journal*, March, 1890.)

The family history of this case was good. The patient was well till the age of five years, when he began to suffer from headaches resembling migraine. The following year unsteadiness of the gait was first noticed, producing occasional falls. This has steadily increased. Two years ago change in the speed was first noticed, and this has also increased.

At present there is talipes equinus in both feet and slight curvature of the spine. In walking the body sways, the legs are widely separated, and the feet are thrown forward. Swaying of the body is marked while standing, but is only slightly increased by closing the eyes. Patellar reflex is absent; there is no muscular atrophy, and no spastic rigidity. Intelligence is unimpaired, but the speech is jerky, with a pause between the syllables. The bowels are regular, the urine normal, with no enuresis.

These symptoms point to disease involving chiefly the posterior columns, and also the medulla. Cerebellar disease would seem to be excluded by the absence of occipital pain, optic neuritis, and patellar reflex, and the presence of ataxia in the upper extremities.

**Recent Researches into Diphtheria.** (*Canada Medical Record*, May, 1890.)

The origin of certain outbreaks of diphtheria has been carefully sought for by several government inspectors. Confusion of nomenclature, by preventing correct registration, was found to be a great hinderance. Sore throats, really diphtheritic in nature, were reported under a dozen different names. One observer inclines to the belief that not all "croup" is diphtheritic, and is led strongly to the theory that there is an association of diphtheria with humidity of atmosphere and dwellings.

The potent influence of school assemblage in disseminating and furthering the disease is proved to demonstration. As to the dependence of the disease on insanitary conditions the observers differ. Dr. Low, by proceeding on broad inductive principles, shows that localities which had the most diphtheria were the least insanitary, and the converse. Mr. Spear, on the other hand, inclines to the causal relation between the two. Supporters of the latter view naturally rely but little upon the propagation of the disease by personal communication.

The more novel points are presented in parts of the report which deal with the influence of factories in disseminating the disease and the possibility of mediate conveyance of the infection by clothing and articles manufactured in infected houses. Evidence is undoubted that factory-women, employed during the week in a town where diphtheria was prevailing, communicated the disease extensively in villages where they spent Sunday.

Instances are recorded of the families of clergymen and doctors in rural parts owing their attacks to the head of the family bringing the disease home in their clothes, and of its being spread by means of coats and straw plait sent out from infected houses.

**Money, Angel: A Case of Fulminating Pyohæmorthorax in an Infant of Eight Months.** (*Provincial Medical Journal*, January 1, 1890.)

This case is of interest from its extreme rarity under the age of twelve months, and the difficulty of distinguishing it from intense broncho-pneumonia.

When first seen, on January 19, there was a history of catarrh for four days. The temperature was normal; respiration twenty-four to the minute. On the following day the respiration ranged from fifty-six to seventy-two, and was expiratory in character. The temperature was 104.2°; the lips slightly blue; the *alæ nasi* working; the pulse, 168. The child screamed on the slightest touch, especially when lifted so as to stretch the trunk. There was dulness, tubular breathing,

and sharp râles at the right base behind. The abdomen was normal; there was no retraction of the head. On the 21st there was no improvement. The dulness increased, and there was a sense of resistance on percussion. The apex-beat was in the fifth space, a quarter of an inch within the nipple line. On the 24th the case was rapidly becoming worse in all the symptoms. The whole of the right side was dull, and there was dulness and crepitation over the left lobe. Twelve ounces of sanguinolent fluid was withdrawn by aspiration, and the respiration and pulse were much improved. They shortly began to fail, however, and it was evident that air had gained access to the pleura. Withdrawal of a few ounces more of fluid gave temporary relief. The thorax was then opened to relieve the pressure of the pneumo-thorax on the lung. The child recovered consciousness, and the pulse and breathing were greatly improved. Vomiting and diarrhœa then became frequent, and the child died on the following day.

At the autopsy there was no tuberculous formation found either in the lungs or glands. The pericardium and left pleura were healthy; there was collapse-pneumonia over the lower half of the lower lobe. The right lung was much reduced in size, and occupied the groove by the side of the vertebræ. It was hard and collapsed in the upper half but friable and pneumonic in the lower half. Muco-pus was seen in the tubes and several small collections of pus were seen in the periphery of the consolidated lower lobe. One of these was in direct communication with the pleura by means of a wide patent fistula. The whole pleura was lined with lymph, and the tissues of the thoracic wall were infiltrated with serum.

The history of the case was probably this: After a catarrh, severe broncho-pneumonia set in, and in places proceeded to the formation of small abscesses. One of these burst into the pleura causing pyohæmothorax of fulminating intensity. Relief followed the removal of intrathoracic pressure, but the bronchial fistula in the lung allowed of the development of a pneumo-thorax of such severity as to jeopardize life by its intrathoracic pressure on the mediastinal contents.

**Ballantyne:** A Case of Peritonitis in a New-Born Infant. (*Edinburgh Medical Journal*, March, 1890.)

The child, without being manifestly ill, died thirty-two hours after a normal but somewhat prolonged labor. Upon autopsy the intestines were found distended with fetid gas and fluid meconium, and there was evidence of extensive dry peritonitis of recent date. In the pelvis there were signs of an older peritonitis about the right Fallopian tube.



Money, Angel: The Spinal Cord of a Recent Case of Infantile Palsy. (*Provincial Medical Journal*, January 1, 1890.)

The child was first seen when two years of age. Two months before there had been an illness marked by fever and vomiting, but no convulsions, at the end of which the paralysis was first noticed. There was nothing of importance in the family history. The paralysis involved both lower limbs, which were wasted, flabby, and relaxed, but not rigid. The skin was peculiar, being thick and hard, but there was no pitting. The knee-jerk was lost on both sides; the abdominal and gluteal reflexes were absent, but the epigastric was easily obtained. The child wet the bed, but the mental condition was so poor that the exact cause of the incontinence could not be ascertained. The wasting was found, by measurement, to be symmetrical. None of the paralyzed muscles acted to the strongest faradic current, but all responded to the constant current of thirty cells. Six weeks after admission to the hospital the child died of broncho-pneumonia.

At the autopsy the diagnosis of broncho-pneumonia was confirmed. The parenchymatous organs were in a state of cloudy swelling; the brain and eyes were normal. Both middle ears contained pus, but there was no necrosis.

The spinal cord, on removal from its canal, presented no signs of disease; but on making total transverse sections from above downward, certain alterations were discovered in the lumbar region. In the middle of the lumbar enlargement a red area was seen to occupy each anterior horn, that on the right side being the most extensive and marked. Each anterior cornu had at its periphery a translucent border, which Dr. Turner has described in a case reported in the *Pathological Society's Transactions*. These changes existed in varying degrees throughout the lumbar enlargement of the spinal cord. A microscopical section from the part where the disease was most marked showed (1) great distention and thrombosis of vessels, especially in the anterior cornu; (2) infiltration of the cornua with abundant leucocytes; (3) absence of large multipolar or other nerve-cells.

The disease was not confined to the anterior horns, but spread forward, outward, and backward through the principal focus of mischief was certainly the anterior horn. The lesion was at its greatest at that point which was farthest from the centre of circulation. It is the author's belief that the morbid signs were those indicative of acute inflammatory disease.

As to causation: the author believes that a study of the cir-

culuation of the spinal cord may furnish an explanation. There is evidence for the belief that the central or gray matter is less well supplied with blood than the outer or white matter. In proof of this he cites the researches of Adamkiewicz, Moxon, Young, and Ross. Compared with other viscera the spinal cord is at a great disadvantage in its supply of pabulum. The lower part of the cord is not as well supplied as the upper, while the gray matter, and more particularly the nerve muscles, have an almost precarious blood-supply. With these facts in view, by invoking Cohnheim's theory of inflammation, the matter is easy of explanation. If, for any reason the walls of the blood-vessels become damaged, all the phenomena of inflammation ensue. Such injury may result from an abnormal condition of the blood, or blood-pressure, and a direct consequence of this would be damage to the vital protoplasm forming the vascular walls. When the circulation recovers itself, all the phenomena of inflammation appear. If damage to the walls be sufficient, we have actual hemorrhage, as found by Clifford Allbutt. The essential feature of this view is the unimportant part played by the nerve-cells in originating the disease. They are simply damaged by disorder of the blood-vessels. The nerve-cells are the victims of the vascular disease.

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### III.—SURGERY.

Owen: Selected Subjects in the Surgery of Infancy and Childhood. (*The Lancet*, February 8, 1890.)

*Wry neck.*—There are few surgeons who do not experience a certain amount of anxiety when proceeding to effect subcutaneous division of the sterno-mastoid. For close beneath the muscle are the internal and anterior jugular veins and the subclavian vein and its tributaries. The deformity may disturb the normal arrangement of the parts and place one of the larger veins in the track of the tenotome.

If one of these veins should be wounded, air may enter and cause an alarming or fatal syncope. The lecturer had one alarming case from such an occurrence.

Eventually the author adopted the plan of dividing the muscle through an open wound. The cases have done equally well, and there is great satisfaction in seeing exactly what is being cut.

*Vesicle calculus.*—It is only a short time since every boy with a stone in his bladder was subjected to lateral lithotomy. Bigelow's operation of crushing and promptly removing all

fragments of a vesicle calculus—litholapaxy—is as well suited for boys as men. The teaching has been that, even if the boy's urethra were capacious enough to allow of the passage of a trustworthy lithotrite, his bladder could not tolerate the necessary interference for pulverizing it. Lithotrity, after Bigelow's method, should be adopted for every boy whose bladder is fairly healthy, whose urethra can be induced to convey the lithotrite, and whose calculus is not too large to be seized nor too hard to be crushed by it.

The lithotrite should always have a trial, and even if it take an hour and a half to remove the last fragment, the time will have been well spent.

A stone weighing seven hundred grains has been removed in this way from a boy nine years of age.

But in every case of lithotrity the instruments should be at hand to finish the removal of the stone by a cutting operation if that becomes necessary. The lecturer thought that the indications were: that every child two years old and upward should be treated by Bigelow's method; infants and a few grown children will be dealt with by lateral lithotomy; and a few large stones will be dealt with by suprapubic operation; but a resort to this method will be found of exceptional occurrence.

Morgan: *Beginnings of Joint-Disease in Children.* (*The Lancet*, February 8 and 22, 1890.)

#### I.

Joint-disease is frequent among children of every class in every community.

The descriptions of acute synovitis given in text-books are made up of observations on adults, and spring from causes many of which do not exist in children.

It is not often present as a primary affection in them, though occasionally it seems to arise spontaneously, or as the result of scarlet fever, measles, or typhoid, and even such conditions are very rare when unaccompanied by disease of the bones or tuberculosis of the synovial membrane.

Sprains in children are exceedingly rare, and an injury which would produce rupture of ligaments or fasciæ in an adult would more probably cause injury to bone or epiphysis in growing children, whose bones are frail, while the ligaments are very strong.

An injury would therefore be more likely to set up inflammatory action, cause necrosis of the epiphyses, and ultimately lead to disorganization of the joint.



The subject of heredity always deserves attention in seeking the history of tubercular joint-disease in children.

Chronic synovitis is a rare disease in children except as the result of rheumatism, and is generally due to constant irritation of inflamed epiphyses, or to tubercular disease.

In the young, joint-disease finds its primary origin either in the synovial membrane or in some portion of bone which enters into the articular surface of the joint, and rarely ever begins in cartilages or ligaments.

The greater the area covered by the synovial membrane the more frequently is it the site of commencement of disease.

Hence we find that disease of the tarsus is of frequent occurrence in children.

Disease of the astragalus is of great consequence to neighboring structures. The cuboid offers a greater chance of arresting disease by means of scraping of the bone. Partial operation in disease of the scaphoid is disappointing. Of all the bones of the foot the os calcis is most frequently diseased and can be most readily treated with satisfactory results.

## II.

Acute spontaneous diseases of the synovial membrane of either the knee or elbow are unusual, and occur either as the result of pyæmia or some form of blood-poisoning akin to it.

Tuberculosis is by far the most common cause of chronic affection of the synovial membrane. The author's impression is that cases of pulpy degeneration in the joint are bacillary in origin, and yet many recover under properly-applied splints and rest.

Should the malady not go on happily, the antiseptic treatment of Lister—exposing and cleaning out the cavity—could be most usefully applied; the great point in the treatment being to perceive when the disease was progressing to abscess, and to treat it before more important structures than the synovial membrane had become affected.

In mentioning other causes of joint-disease in children the lecturer thought that syphilis was spoken of oftener than was warranted by actual experience. When due to that cause joint-disease is exceedingly easy to recognize, and it yields in a marvellous way to treatment. One of the earliest symptoms of knee-joint disease is to be discovered by gently pressing round the bony surfaces, when it would be found that pain, due to an inflammatory state of the cancellous tissue of the epiphyses, could generally be elicited first at the most prominent part of the inner condyle, and might occasionally be

detected over the outer condyle. The pathological analogies between the knee and elbow are nearly as closely associated as the anatomical ones.

In either case the first evidence of the disease is when the synovial membrane is nearest the surface. The lecturer had no recollection of having seen any case in which disease commenced primarily in the head of the radius or in the olecranon, for the simple reason that until the tenth year these parts were cartilaginous.

Owen, Edmund: Treatment of Enlarged Glands. (*The Lancet*, January 11, 1890.)

A branding scar upon the neck of a child, the result of abscesses in the cervical glands, is the result of neglect or improper treatment.

Prolonged application of iodine and poulticing is harmful.

These glands should no more be left to nature than a carious tooth or a suppurating joint.

Hygienic treatment should first be employed, then, if it fail, operative treatment should be resorted to, with the promise that the operation will be associated with no great risk, that it may be trusted to effect a very great improvement, and that if it has to be repeated, it has prepared the way for a final and completely successful attack.

Croft: Present State of Surgical Treatment of Tubercular Disease of Joints. (*The Lancet*, February 8, 1890.)

The author summarizes the relative positions of the two parties holding fixed ideas on the treatment of tubercular joint-disease, and discusses *seriatim* the objections maintained against excision under the following heads: mortality, necrosis, shortening, duration of illness, risk of and precipitation of general infection, incomplete ablation of disease, transitory character of tubercular tendency.

1. *Mortality*.—Statistics are compared and criticised. After all deductions are made the rate of mortality is found to be slightly in favor of the anti-excisionists.

Improved methods of operating, combined with better conditions under which operations are undertaken, may be confidently expected to bring the mortality rates of the two parties nearly or quite level, and then the advantages claimed by the operationists will be better realized.

2. *Necrosis*.—The frequency of sequestra in the hip is disputed. It has been found that necrosis occurred in nearly sixty per cent. of the cases examined, and though maintained

by the anti-excisionists that the sequestra are always so soft and friable as to readily disintegrate and be discharged, the author holds the opposite. He considers the possibility of the occurrence of necrosis a reason for excision.

3. *Shortening*.—Until recently there was sure to be considerable shortening after excision. Improved methods of operating tend to lessen the amount of shortening after excision, and therewith this objection to operation will gradually dwindle away.

4. *Duration of illness after operation*.—The average duration of thirty-seven cases of suppuration, treated without operation, up to the time at which all symptoms of disease disappeared and the children were walking freely on the limb and without crutches, was a little under five years.

The duration after operation of the author's first forty-five cases was three years.

In this most important matter of saving time and suffering in a child the excisionists have obtained a decided advantage over the opposite side.

5. *Risk of general infection and risk of precipitation of general infection*.—It must be admitted that the risk has been less on the side of those who advocate treatment without operation. The modern excisionist uses this reason on behalf of early operation. He recognizes the risk, and he does his best to avoid it by (1) operating early, (2) by cutting wide of the diseased tissues, and (3) by obtaining union of the cut surfaces by first intention.

On the transitory character of the tubercular tendency there is no room for dispute, but the excisionist would relieve the sufferings of the child and abridge the duration of illness.

The author concludes the paper with a discussion of the work of the arthrectomist. In this way the removal of the disease may occasionally be accomplished without the loss of bone.

The fault of the arthrectomist lies in this: tubercular disease situated at the epiphyseal lines may escape him. In advanced cases and in cases of more wide-spread disease a more radical treatment is called for.

Southam: Lithotritry in a Child. (*The Lancet*, February 15, 1890.)

The patient was three and a half years of age. The operation was done under chloroform. Four ounces of boracic lotion having been injected, the stone was readily seized and crushed with a No. 7 lithotrite, which was introduced into the bladder without any difficulty. The fragments weighed when dried fifteen grains.



The operation, which lasted twenty-five minutes, was extremely well borne by the patient. There was never any elevation of temperature. Micturition was not more painful than before the operation, and the urine which was passed was free from blood and *débris*.

On the third day the patient was out of bed, and on the seventh day he left the hospital completely relieved of all his former symptoms.

**Rivington: Operations for Disease of the Hip-Joint.**  
(*The Lancet*, April 26, 1890.)

Separation of the epiphysis of the femur in hip-joint disease illustrates a condition for which early operation is desirable. This separation has been found to occur in sixty per cent. of the cases examined.

Three cases are reported:

**CASE I.** *Excision of the hip-joint: recovery with a serviceable limb.*—In the remarks on this case the author says that since excision of the hip-joint so frequently gives a maimed and shortened limb which grows relatively shorter and shorter, it is an operation to be avoided except to improve the general or local condition of the patient. The author divides the cases into four groups for treatment:

1. For deformity in old cases. This is usually remediable by subcutaneous division of fasciæ and tendon followed by extension.

2. Cases without abscesses successfully treated by weight and splint.

3. Abscesses outside of the joint. For this class the author has never practised excision.

4. Abscesses communicating with the joint or sinuses leading to the joint.

These may be treated with operation or without it. If the epiphysis is separated it should be removed.

If there is necrosis or caries likely to undergo degeneration, excision should be practical.

One of the author's cases is interesting from having occurred after typhoid fever.

The third case was a fatal one, following simultaneous excision of both hip-joints. Death was due to pyæmia.

In regard to displacement of the head of the femur in disease of the hip-joint, the author believes that the ordinary displacement takes place directly backward onto the surface of the ischium instead of onto the dorsum ilii as usually described.

**Humphreys: Repeated Recurrence of Intussusception of the Bowel: Reduction by the Hydrostatic Method.** (*The Lancet*, January 11, 1890.)

In the *Lancet* of October 28, 1888, the author published two cases of intussusception of the bowel. One of these has kept in good health, the other has had two repetitions of the complaint.

An account of the attacks is given and the three compared.

The case is remarkable in the fact of so young a child getting over three attacks.

The recurrence may perhaps be explained by the laxity of the mesocolon, assisted by the constipation from which the child had suffered since its birth. Each attack occurred while the child was teething. The sausage-shaped tumor was absent, —dulness in the lower part of the stomach being the only alteration.

The vomiting and pain always appeared simultaneously as the first sign. The flow of blood appeared latest in the mildest attacks.

The expression of relief shown in the child's face seems to be a good sign as to when the bowel is reduced, though in doubtful or relapsed cases it is as well to fill the abdomen with water short of pain to the child.

The method of treatment is called the hydrostatic method, and consists simply of injecting water by means of a fountain syringe under a pressure short of causing straining down on the part of the child.

Application of a pad and binder certainly affords comfort to the child, and seems to be of service in steadying the bowel and limiting peristaltic movement.

**Pfender: Diagnosis of Stricture of the Rectum in Children.** (*Rev. Mens. des Mal. de l'Enf.*, February, 1890.)

The history of stricture of the rectum in children is of recent date. The condition is somewhat rare at this period of life, for children are not exposed to many of the causes which produce it in adults. Also it is latent in its evolution, and the few functional symptoms which it provokes constitute a reason why, in congenital cases, it may remain undiscovered until puberty has been passed. An attack of rectitis may form the first intimation of its presence. Gosselin's definition of stricture of the rectum is a condition in which there is a diminution in the lumen of the organ caused by a transformation of the extensible tissue of its walls into inextensible tissue. This definition would not apply to all cases of stricture in children, for in some of them the

valvular narrowing does not render the wall of the rectum inextensible, at least at the beginning. In all cases, as Trelat and Delens have said, there is a thickening or transformation of the walls of the rectum. Trollin mentions four causes apart from syphilis for this condition,—traumatism of whatever character, inflammation, habitual constipation, and the presence of foreign bodies. In all cases, according to Reynier, the extent of the thickening in children is slight, but in a case reported by the author it was extensive, the rectum being converted into a long fibrous cylinder. The practical point of the paper is that in view of the possible latency of this condition and the complications which are possible, one should know the condition of the rectum by examination even in very young children.

A. F. C.

Owen, Edmund: Congenital Cystic Hygroma. (*The Lancet*, January 11, 1890.)

The surgeon must always be prepared for a hygromatous tumor becoming suddenly increased in size, hot, and tender; indeed, he will gladly welcome the attack of inflammation, provided that it does not assume extreme proportions, for he may with confidence expect that on its subsidence the tumor will steadily decrease and in due course become effaced.

Tapping is all that should ever be undertaken in the case of cystic hygroma. That the hygromata are composed of dilated lymph-spaces there is no doubt. These tumors are usually found in the neighborhood of the neck, face, or armpit; still they may occur upon the trunk.

An important clinical feature of cervical hygroma is that it may involve the pinna without causing a dislocation of the surface, as a *nævus* would do, or without giving local and general signs of malignancy.

Verneuil: Supposed Congenital Luxations of the Hip. (*Rev. Mens. des Mal. de l'Enf.*, March, 1890.)

The author is unable to deny the existence of intrauterine luxation. He believes that coxo-femoral luxations occurring at the time of birth are very rare, hundreds of examinations of dead fetuses having been made to determine this fact by himself and his assistants. On the other hand, Verneuil believes that many of the cases of luxation supposed to be congenital are the consequents of muscular lesions in connection with infantile paralysis. Usually the diagnosis of the cases of so-called congenital luxation of the femur are made about the age of two years, when parents are disturbed at the ineffectual attempts of a child to walk as a child of that age should walk.



The author offers a prize of three hundred francs for every case, not to exceed ten, in which a dissection will clearly demonstrate the existence of this lesion; the dissections to be made during the current year. Excluded from this offer are luxations consecutive to other accidents, malformations in which the head of the femur is wanting, and other malformations of the hip in non-viable monstrosities. A. F. C.

Smith, Noble: Typical Cases of Immediate Reduction of Deformity after Tenotomy. (*The Lancet*, March 15, 1890.)

The author has selected a few cases, from many others similarly dealt with, as instances of the result obtained by immediate reduction of deformity after tenotomy. In all the cases which the author has operated upon, there has been perfect union of the divided tendon, and the function of the muscle (unless totally paralyzed) has been improved.

The advantages of this method are: first, that it allows exact adjustment of the displaced part to a natural position or (in cases where the resistance of other structures prevents it) to as near such position as possible; secondly, the after-treatment is very much simplified, so that the apparatus required need not cost a quarter as much. Union of the cut ends of the tendon occurs by a gradual thickening of the uniting material, the cut ends retaining their relative position.

In all cases the patient must wear a supporting apparatus for a time. It is the use of such that makes it possible to allow the patient to walk about safely so soon after operation.

The apparatus used has a movable joint, but is so arranged that the motion can be limited to whatever degree desired simply by inserting a peg. This apparatus is applicable not only to treatment of club-foot, but to that of all other similar contractions.

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(Continued from page 882.)

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## HOW TO PREVENT SCARLET FEVER.

BY J. LEWIS SMITH, M.D.,

New York.

IN order to determine how to prevent a disease, the nature and mode of operation of its cause should be ascertained. This is especially true as regards the infectious maladies. The microbe which causes scarlet fever has not been positively ascertained, but the mode in which it is propagated is known to a certain extent by clinical observations. Scarlet fever is contagious from the first day of its occurrence, and if no disinfection be employed, its contagiousness probably does not cease as long as desquamation continues. The discharge from the ear following scarlet fever, due to otitis media, is believed by some to be infectious, even after the desquamative period is over, unless the ear be treated by antiseptic injections. If this be so, the contagiousness of scarlet fever is prolonged beyond that of most other infectious maladies.

The area of contagiousness of this disease is small, extending only a few feet from the patient. Hence in the asylums its spread is more certainly prevented by strict isolation of patients than is measles or pertussis, the specific principles of which are more diffusible in the atmosphere, and their area of contagiousness therefore considerably greater. The fixity or feeble diffusibility of the scarlatinous poison affords explanation of the fact that many children who are exposed, particularly if remotely exposed, do not contract the disease. Dr. Billington has stated that of 90 children, in 26 families, who were exposed to scarlet fever, 43 contracted it, while the remaining 47 escaped; whereas, as is well known, few children unprotected by a previous attack fail to contract pertussis, variola, varicella, or measles if exposed to either of these diseases. In the New York Foundling Asylum, during a series of years, children with scarlet fever were quarantined in a small room attached to one of the wards. The door between this room and the ward was permanently closed, and the nurses of the scarlet-fever patients were strictly isolated. By these simple precautionary measures an outbreak of scarlet fever in this institution was usually limited to a few cases, whereas the same precautionary measures employed in regard to measles and pertussis were ineffectual in preventing these diseases, which required isolation to a greater distance.

But this advantage in the small area of contagiousness of scarlet fever is more than counterbalanced by the remarkable tenacity with which the scarlatinous poison adheres to persons and objects, and its consequent portability from one locality to another. In its tenacious attachment to objects and its portability, the scarlatinous virus surpasses that of any other eruptive fever except small-pox. I have never met a case in which there was even the suspicion that measles or pertussis was communicated by a third person or by an infected article, but scarlet fever is often communicated in this manner. In one instance that came under my notice, a washerwoman, whose child had scarlet fever, communicated this disease to the infant in the household where she was employed by placing her shawl over the cradle in which it was lying.

In the *New York Medical Record*, August 4, 1888, the case



of a servant-girl is related, who nursed a child with scarlet fever in a distant city. She then packed in a trunk her effects, including the dress which she had worn when nursing the patient. The trunk brought from the distant city was opened one year subsequently in the presence of a girl of eight years, who handled the articles. This girl was soon after attacked with scarlet fever, and as she had not been away from home, and as there was no other case in the vicinity, there could be no reasonable doubt that the contents of the trunk, undisturbed for a year, had communicated the disease.

A physician of my acquaintance called upon a family, stated that he had just come from a case of scarlet fever, and took one of the children upon his lap. This child soon came down with a fatal form of the disease, and the two remaining children also contracted it, one of them dying. In New York City, cases which I have observed render it highly probable that scarlet fever is often communicated through school-books and primers, which, illustrated by pictures and rendered attractive to the young, often lie on the bed of the scarlatinous patient, and are handled by him during his convalescence or even in the disease, if it be mild. The young librarian of the circulating library of a Sunday-school, whose pupils came largely from the tenement houses, spent one day in covering and arranging the books. After about the usual incubative period of scarlet fever he sickened with the disease. His two sisters were immediately removed to an inland town three hundred miles away, and to an isolated house, where scarlet fever had never occurred. About one month after his recovery, the room which he occupied having been disinfected by burning sulphur, the bed-clothes and linen washed in boiling water, and all articles suspected of holding the poison either disinfected or destroyed, the brother visited his sisters in the country. Soon after one of them sickened with scarlet fever, and a little later, the other also. Two months elapsed after the last case, the room occupied in the country-house had been fumigated by burning sulphur from morning until evening, and the family had returned to New York, when a little girl from an inland city remained a few days in the house. She also soon after sickened with scarlet fever, which was

fatal. Similar cases might be related, showing that the scarlatinous poison adheres tenaciously to objects for many months, so as to produce the disease in those who are so unfortunate as to be exposed. The judicious regulations enforced by health boards have certainly had an effect in diminishing the prevalence of all contagious diseases, but cases such as I have detailed show the urgent need of additional prophylactic measures as regards scarlet fever, and the same is true of diphtheria.

It is the common practice, after the termination of a contagious disease, to disinfect the apartment vacated by the patient by burning sulphur, with the windows and doors closed. Is this the best that can be done? It is certain that it often fails to produce the desired effect. I have elsewhere stated that in the winter of 1887-88 diphtheria prevailed in the New York Infant Asylum, and that a ward in which five cases had occurred was vacated, its doors, windows, and crevices closed, and sulphur, forty pounds or two pounds to the one hundred cubic feet of air, was burnt in the ward until it was consumed. After some hours the doors and windows were opened, and Drs. Prudden and Cheeseman immediately raised a dust from the floor and bedding, and allowed it to settle in culture-media. All other sources of infection were excluded from the media. The cultures produced so large a number of microbes that they overlay each other, but the observers were able to distinguish the streptococcus pyogenes in the media identical in form and appearance with the streptococcus which they had previously discovered in an umbilical phlegmon, which one of the diphtheritic infants had in addition to the faucial diphtheria. Although more sulphur was employed than is recommended by the New York Health Board, it was inadequate to destroy the microbes.

Dr. Squibb, who is justly regarded as a high authority in matters pertaining to domiciliary disinfection, and to whom the above facts were communicated, replied that, in his opinion, the lack of success from the employment of the sulphur vapor as a disinfectant is due in part to the fact that it is used in too dry a state. If the sulphur be burnt over a wet sand-bath, or in a room with boiling water, he believes that its germicidal

power is greatly increased. Professor Prudden, witnessing the feeble germicidal action of burning sulphur, likens it to the burning of incense before the image of an offended deity, and says that it is scarcely more efficacious. Perhaps chlorine is a more efficient germicide, evolved by adding sulphuric acid to a mixture of salt and black oxide of manganese, as employed by Professor Doremus in the Bellevue Hospital wards.

But attempts to prevent the spread of scarlet fever as well as of diphtheria by disinfection of the vacated room, after the termination of the case, can only be partially successful, if efficient preventive measures be not also employed during the continuance of the case, so as to prevent the formation of the poison or destroy it as soon as it is formed. According to my observations, efficient prophylaxis requires the constant employment of disinfectants in the sick-room, or upon the patient, from the beginning of the disease, or from the first visit of the physician.

Twenty-one years ago, Dr. William Budd, of Bristol, England, wrote of scarlet fever: "Time after time I have treated this fever in houses crowded from attic to basement, with children and others, who have nevertheless escaped infection. The two elements in the method are separation on the one hand, and disinfection on the other." I am not aware that Dr. Budd stated in detail his method of isolation and disinfection. The New York Health Board very properly gives directions that all objects not required to promote the comfort of the patients shall be removed from the sick-room; its floor and walls should be bare, and no one be allowed to enter it except the physician, nurse, and near relations. For reasons already stated, books, primers, and other reading matter should not be allowed in the hands, upon the bed, or in the room occupied by a scarlatinous patient, unless positive directions be given that they be subsequently burnt.

The attempt to prevent the spread of scarlet fever, and the other infectious diseases, by administering internally antiseptics and disinfectants to those who are exposed has, I believe, thus far met with little encouragement. It is a question whether the efficient antiseptics employed internally can, on account of their toxic properties, be safely used in doses sufficiently large



to counteract the specific principle of scarlet fever, when it has obtained lodgement in the system, so as to prevent the disease. Certainly, in the present state of our knowledge, the most efficient and reliable prophylactic measures consist in strict isolation of the patient, the disinfection of his person, disinfection of the air which surrounds him, and of objects and persons that are in close relation with him. It is quite possible, I think, by the employment of such measures, to realize the experience of Dr. Budd. I recommend for disinfection of the room at my first visit, to be used almost continuously during the progress of the case, the following prescription :

R    *Acidi carbolici*,  
       *Ol. eucalypti*, aa  $\mathfrak{z}i$  ;  
       *Spts. terebinth.*,  $\mathfrak{z}vi$ .    *Misce.* .

Two tablespoonfuls are added to one quart of water in a tin wash-basin or similar vessel with broad surface, and maintained in a state of constant simmering over a gas or oil stove. The odor of this vapor is agreeable rather than unpleasant, and it appears to disinfect, to a considerable extent, the breath and exhalations from the body of the patient. At the same time inunction is prescribed of the entire surface every three hours with the following :

R    *Acidi carbolici*,  
       *Ol. eucalypti*, aa  $\mathfrak{z}i$  ;  
       *Ol. olivæ*,  $\mathfrak{z}vii$ .    *Misce.*

Pharyngitis, varying in severity according to the type of scarlet fever, is present in all cases. In not a few instances, in New York City, where diphtheria prevails, either a diphtheritic exudate occurs upon the faucial surface, or the intensity of the scarlatinal inflammation produces a superficial necrosis, forming an eschar, which is with difficulty distinguished from a diphtheritic patch. The breath exhaled over this surface is offensive, highly infectious, if no disinfectant be used, and is no doubt the vehicle in numberless instances by which the disease is communicated. Therefore, the frequent application to the faucial surface of an antiseptic lotion or spray is strongly

indicated. Not only for its beneficial effect on the patient, but as a means of diminishing the contagiousness of the disease.

Perhaps no better disinfectant can be employed than corrosive sublimate, two grains to the pint of water, applied every second hour. One drachm contains one-sixty-fourth of a grain. It may be used as a gargle, or as a spray from a hard rubber atomizer. The sponge is too rough and irritating for the application of this or any other solution to the inflamed fauces. A large camel's-hair pencil, or surgeon's lint or absorbent cotton wound around a slender stick, may be used in the same manner in which Oatman and others employ it in the treatment of diphtheria, the application being made not only over the tonsils, but over the surface of the pharynx, behind and below the tonsils. Of course it is the anginose form of scarlet fever that more particularly requires this mode of treatment, and solutions of corrosive sublimate should be used cautiously, so that a toxic amount of it does not enter the system. In mild scarlatinous pharyngitis, attended by no pseudo-membranous exudate, necrosis, ulceration, or foul breath, local treatment of the fauces may not be required.

The corrosive sublimate solution, two grains to the pint, may also be advantageously employed for the Schneiderian surface, if it be red, swollen, and attended by a discharge. It may be applied to the nostrils by a small syringe, an atomizer, or, in infants, by a medicine dropper. For a child of three to five years half a teaspoonful may be employed for each nostril, care being taken that, between the nasal and faucial applications, not more than one-sixtieth of a grain of corrosive sublimate be used every two hours.

Antiseptic measures thus employed, certainly greatly diminish the contagiousness of scarlet fever, but it is so very contagious that additional precaution should be taken. Constant ventilation of the sick-room should be maintained, whatever the weather, during the active period of the fever. This can be accomplished by a window partly open, a draft upon the patient being prevented by a screen, the temperature in the room being maintained at seventy degrees, if necessary, by a fire. No letter or written message or article of apparel or furniture should be sent from the room to any family during the con-

tinuance of the fever, nor afterwards until proper disinfection be employed, and sufficient time have elapsed.

The cautious physician in attending scarlet fever will always bear in mind the possibility that his person or clothing may become infected, and be the vehicle by which the poison may be communicated to others. In examining the fauces of a patient he should stand a little to one side, so that no mucopus, if the patient cough, be received upon his clothing, and he will not go directly from a scarlatinous patient to a child with another sickness, or to a midwifery case, without first washing his hands, hair, and face in an antiseptic solution, and changing his outer apparel, or if he be hastily summoned to a case, without the opportunity of proper personal disinfection, he will approach no nearer the patient than is sufficient for a clear diagnosis.

Do Health Boards accomplish all that they are able to do in suppressing scarlet fever as well as diphtheria, the prevention of which has been so well discussed before this society by Dr. Caillé? The exclusion from the schools of children living in the houses where either of these diseases is occurring, the directions given for the disinfection of the bedding, clothes, and articles employed in the sick-room, and the promise to disinfect the sick-room when word is sent to the Board show a praiseworthy endeavor to eradicate diphtheria and scarlet fever, as small-pox has been eradicated. But these measures are only partially successful. To my knowledge many families in tenement houses never send word that they are ready for disinfection, and many move away as soon as the sickness is terminated, in the belief that they can find more salubrious apartments elsewhere. The vacated rooms are re-rented as soon as possible to families, who have no knowledge of the previous sickness, and are surprised when their children immediately afterwards are taken sick. Although the measures employed by Health Boards for domiciliary disinfection may be inadequate, it is the duty of attending physicians to see that they are carried out, such as they are, and to direct the employment of such other remedies as may seem necessary, in order to prevent propagation of the disease. The rubbing of the walls of the infected apartment with slices of fresh bread,



which gather up microbes, as recommended by Professor Prudden, and especially whitewashing or calcimining or washing of the ceiling, walls, and floor with a solution of corrosive sublimate, should be insisted on before the apartment is again occupied.

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## HOW TO PREVENT DIPHTHERIA.

BY AUGUSTUS CAILLÉ, M.D.,

New York.

THE extension of our knowledge concerning the bacterial origin of many forms of disease is the greatest achievement in the medical progress of this century, and marks an epoch in scientific progress generally.

Thought and inquiry are forced into new directions, and preventive medicine is raised from its speculative depths and claims consideration on a scientific basis.

Signal success has attended our efforts in preventing wound infection, but the prophylaxis of strictly non-surgical disease has up to the present time not reached a satisfactory state of development. The reason is obvious: the infection of some external visible and accessible lesion may be prevented with ordinary care and by comparatively simple and safe means; on the other hand, we must at the outset recognize the difficulty of attempting to prevent the absorption of septic matter through the mucous lining of the respiratory and digestive tract. That this difficulty will in many instances be overcome I do not doubt; for the more we become familiar with the laws governing, and the conditions necessary for, infection, the stronger will become our desires for preventive measures.

Puerperal sepsis, which was a mystery up to the time of Semmelweiss, now yields to preventive management. Diphtheria, in many respects analogous to puerperal sepsis, is next in order to forfeit the dignity of its former position among the diseases of obscure origin and pernicious effect.

I cannot here speak in detail of the dangers of diphtheritic sepsis, its general prevalence and endemic position in all large cities. In the present state of our knowledge we look upon

diphtheria as of bacterial origin, whose propagation is favored by moisture and the absence of sunlight. Diphtheria exerts its pernicious influence principally on the individual living in poor hygienic surroundings, or upon those who are already afflicted with chronic or acute catarrhal lesions of the upper respiratory tract (the usual site of its access), upon which the poison of diphtheria finds a favorable nidus for development and propagation.

Although diphtheria is probably of exotic origin, it is at the present time quite beyond the control of the central government, and the study of its prevention must be viewed with reference to municipal control. As my personal experience is limited, as far as diphtheria is concerned, to the city of New York, my review and suggestions of preventive measures shall be made with reference to the habits and conditions of the people of New York City.

Towards the prevention of infectious diseases in general, and diphtheria in particular, certain systematic methods are directed, which may be classified as follows:

1. Measures tending to dilute or destroy the existing poison.
2. Measures tending to prevent the infection of the individual. Thus the following features present themselves for brief consideration :
1. The schools, public, parochial, and private.
2. Homes and dwelling-places of the people.
3. Disinfection and disinfecting stations.
4. Isolating hospitals and temporary homes for poor children.
5. Street-cleaning.
6. Personal prophylaxis.

The schools, public, parochial, and private, are the great centres for diphtheritic infection, and none but the most radical measures will succeed in bringing about a change for the better.

For each school one or more sanitary inspectors should be appointed,\* whose duty it would be to see that the rooms are not

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\* As previously suggested by Dr. Herman Ludwig Cohn, in his brochure "Über die Nothwendigkeit der Einführung von Schularzten." Breslau, 1886.

overheated, and to make a rapid but efficient inspection of the children's throats as they enter or leave school. No tongue-depressor should be used, and the children should be taught to use their own fingers as a tongue-depressor. Each child who is found to be afflicted with an inflamed throat, nasal catarrh, cutaneous eruption, ophthalmo-blennorrhœa, or any other plain evidence of disease, should at once be sent home with a printed card announcing, "Your child is sick; take it to a physician or dispensary."

During the year 1888 the number of children taught at public schools was three hundred thousand; the average total attendance, one hundred and fifty-seven thousand; this includes the public day schools and evening schools, nautical schools, and all the corporate schools, such as industrial, reformatory, and orphan asylums (Forty-seventh Annual Report of Board of Education).

One physician or inspector is able to inspect from five hundred to six hundred children in an hour (say 8 to 9 A.M.), and in all probability the daily services of three hundred physicians for one hour would suffice for the necessary inspection. For such services the city should pay each physician three hundred dollars (yearly), making a total of about one hundred thousand dollars,—a paltry sum for our community to pay if we take into consideration the direct benefit accruing therefrom. All private schools should secure the services of a physician for daily inspection, and for such services rendered an addition of five dollars to the quarterly tuition fee will meet with no objection on the part of the parents of children attending those institutions. It is a well-known fact and common experience that older children are apt to conceal the first symptoms of illness for fear of being obliged to remain home from school and thereby falling short in their studies and losing ground in their class; moreover, this pathological excrescence of our high-pressure educational system would be effectually checked by a rigid inspection, and I sincerely hope that an endorsement of the foregoing suggestion will go forth from this Society and fall upon fruitful soil.

*Street-cleaning.*—Manhattan Island is so located that thorough drainage and clean streets can be secured. At the present



time, however, with incomplete subways and transit facilities, and the city pavement in perpetual motion, no system of cleaning will avail.

Our present system is so elementary and unsatisfactory that a study of the best methods of other countries is opportune; at any rate, we should insist upon having the street-cleaning and removal of ashes done entirely at night and in such a manner as to avoid dust; for it is the atmospheric dust which irritates the upper air-passages; such a condition occasions congestion, and consequently predisposes to diphtheritic inflammation.

*The tenement houses.*—The past ten years have wrought a great change in the appearance and appointments of the tenements in our city. The average city lot is twenty-five by one hundred, and the older double tenements occupied from forty to fifty feet of the lot. Each side of the house contained four rooms. The water and sink were located in the hall-way on each floor; the privy vaults were in the yard, which was large and spacious unless partly occupied by a small two- or three-story rear house. In the "old-style" houses the hall-ways were quite dark, and unless the sinks were well trapped a noxious odor from the sewers was prevalent; but the apartments, on the other hand, had no connection with the sewer, and, as the houses were not deep, each family occupying half a floor through had plenty of light and ventilation.

Since 1880 vast improvements have been made. Houses eighty-five feet deep, with seven rooms on the half-floor, are now built upon the same sized lot. Each floor has two hopper closets, and each apartment two stationary tubs for washing, and in some cases a stationary ice-box,—all connecting ultimately with the sewer. The front and rear rooms certainly are light and airy; the five interior rooms all connect with a narrow air-shaft or court-yard, which is supposed to admit sunlight and fresh air. Now, the fact is that many of the interior rooms are so dark that an artificial light for any kind of work is necessary. The court-yard is open above, flagged below. It has a drain into the sewer and is trapped. Whenever we have a dry period the stagnant water in the trap becomes foul and furnishes foul air for all the bedrooms.

The water supply for the three upper floors is secured by

means of a tank on the roof, into which the water is pumped once or twice a day. These tanks contain considerable organic matter, and it appears to me that during the hot months, when the water in the tanks becomes heated by the sun's rays, such a preponderance of organic matter must become a source of danger. Notwithstanding the progress in sanitary plumbing, I know it to be a fact that our improved flats and tenements always contain sewer gas. This complex gas will not in itself create specific disease, but it will certainly produce that condition of malaise which we are so often called upon to treat, and which predisposes to all forms of infectious disease, notably diphtheria.

It may be interesting in this connection to refer to the experimental introduction of some forms of water-closets in our city. The old-style privy vaults were the same as are used in most European cities, and were a perpetual source of bad smells, because there was no way of keeping them tightly closed. Some years ago the "school sinks" were introduced by order of the Board of Health, and soon got into public favor as a great improvement on the privy vault. After a large number of houses had been provided with such closets, their introduction was abandoned in favor of hopper closets, and at the present time all tenements are provided with such closets, usually two on each floor.

The abandoning of the popular school sinks was a surprise to property owners, but finds its explanation to a certain extent in the following circumstances, as reported by Dr. Cyrus Edson in his communication, "The Poison of Typhoid Fever" (*Medical Record*, January 5, 1889):

"Twelve cases of typhoid fever were due to the following method of infection, which was discovered by investigation. Six cases of typhoid fever occurred in a tenement house in West Thirty-second Street.

"The first case in the house occurred on August 15, and was in the person of an employé of the Department of Public Works, whose duty it was to clean and repair the public sewers. The other cases appeared in from twenty to sixty days after the first. The plumbing of the house was carefully examined and no defects were found. I visited the premises

and found that the school-sink privy in the yard was flushed by means of a branch from the Croton supply-pipe, introduced in such a manner that its mouth was just under the surface of the contents of the sink when the latter was full. On account of the insufficient water supply a force-pump was provided in the hall of each floor of the house above the first story. No fixtures were placed in the living rooms, the occupants of the different floors being compelled to obtain the water they used from the pumps in the halls. The supply to the school sink was provided with the usual valve to cut off the water, but this valve was always turned on so as to allow a stream of water to constantly flush the sink. When two pumps were being operated at once the suction induced was sufficient not alone to draw from the Croton main, but also to suck a portion of the privy contents into the water-pipes, thus contaminating the water. The amount drawn in was not enough to attract the attention of the tenants by the taste imparted to the water. The other six cases attributable to this cause were in a house in West Thirty-seventh Street, and the conditions found were the same as those I have just described."

As an instance of one of the sources of disease propagation the above illustration deserves to be generally known. The high valuation of real estate on the one hand, and the demand for healthy and comfortable apartments for the working-class on the other hand, puts us face to face with a problem difficult of solution; still I cannot but state my firm conviction that the improved twenty-family tenement house is a serious mistake, and that the future tenements should be of simple construction, with an annex for all waste-pipes and such conveniences and modern improvements which are known to be a source of danger to the tenants.

*Disinfection and isolation.*—Through the courtesy of Dr. Cyrus Edson, I am able to report upon the means employed by the Health Department of New York City, for the prevention of contagious disease, and for the treatment of such cases as come under its charge in this city. These regulations are given in the abstract, and will probably be of interest, as they have never been published.



1. Certain sections of the Sanitary Code require physicians to report contagious disease.

2. The city is divided into ten districts, under the supervision of ten medical inspectors.

3. On the report of a case the inspector visits the premises, and if they are occupied by three families or more, each family is notified of the existence of contagious disease thereat.

He endeavors to trace the disease to its origin, provides disinfectants, and reports the case at school. He investigates the premises as to sanitary defects, and his recommendation secures an order for repairs.

After the termination of a case, if it has occurred in a private family, the inspector calls on the attending physician and offers the aid of the department as to disinfection, etc. If the case is to go to a hospital it is first seen by a special inspector, who has special experience in diagnosis, in order to protect the city from an action brought by persons removed to hospitals by reason of a faulty diagnosis. If contagious disease exists in the living-rooms of a family having a cigar, grocery, dry-goods, or clothing store in front, the place of business is closed by the department, the patient invariably taken to the hospital, and the premises fumigated, after which business is resumed.

The department's means of conveyance are coupés and ambulances.

It is the intention of the department at an early date to remove portable articles to a disinfecting station and disinfect by hot air and steam.

The Willard Parker Hospital accommodates seventy to eighty patients, the wards for scarlatina and diphtheria being entirely disconnected from each other, also the attendants. Mothers are frequently allowed to accompany children, providing they will comply with the rules and regulations, and remain in the hospital until the case terminates. Friends of patients can visit the hospital once a week, and remain one-half hour. It has not yet come to the knowledge of the department that any person who has visited the patients of this hospital has propagated contagious disease by such act.

With a view to the better education of nurses in the treatment of contagious disease, certain training schools have an arrangement with the Willard Parker Hospital whereby the Health Department affords opportunity for the pupils of the training-school to have special instruction in the treatment of contagious disease.

The Health Department has appointed three pathologists, whose position is purely an honorary one.

In my opinion the above rules are in every way admirable, and ought to be effective if carried out. In some instances the alterations ordered by the inspectors and the board appear to be unjust, and the interests of the house owner are made to suffer without an adequate gain to the tenants and the community.

The Willard Parker Hospital has proved all that was hoped for, and it is to be hoped that a dozen such institutions will be erected and be provided with a bureau of inquiry, presided over by a gentlemanly official, to answer during certain hours the questions of anxious parents.

The erection of temporary homes, open-air play-rooms on house-tops, and water-fronts for the poor, is only a question of time, and would certainly contribute to the welfare of the people.

The courtesy of the Health Department towards the attending physician is much appreciated by the medical profession; on the other hand, many practitioners do not appear to realize that a physician should be a sanitarian as well, and not limit his management of a case to the prescribing of drugs. It is the duty of the attending physician to secure, if possible, proper isolation of a person sick with diphtheria, and such a person should be placed in a room having the best light and ventilation. This room should be bare of everything except what is necessary in the management of a case. Persons in attendance upon a case of diphtheria should wear a long loose wrapper with sleeves drawn tightly at the wrists. For the cleansing of hands I prefer sapolio and Labarraque's solution. Contaminated articles of little value should be burnt. The bodies of the dead should be tightly wrapped up in some cheap material saturated with a strong bichloride of mercury solution,

not to be exposed before burial or cremation, and no public funeral should be permitted.

The disinfection of dwellings and apartments is done by means of sulphur dioxide. It has been claimed upon good authority that such a procedure is wholly ineffective, but as better means have not been suggested the old method will probably prevail. Recent trials appear to prove that sulphur dioxide is decidedly more effective in the presence of moisture, and this fact is always to be remembered when sulphur dioxide is used as a disinfectant.

The disinfection of schools, theatres, churches, conveyances, and railroad coaches, etc., is also a matter of serious importance.

*Personal prophylaxis.*—It is now generally recognized that the municipal control of diphtheria is inadequate, and that methods of personal prophylaxis in diphtheria and other forms of infectious disease are of the greatest value and importance.

One of the paragraphs in the Health Board's instructions for disinfection reads as follows: "Persons in contact with patients sick with diphtheria should use disinfectant gargles under the direction of a physician." I have been informed that this paragraph was suggested by my first communication on a "Method of Prophylaxis in Diphtheria," published in the *Medical Record*, February 18, 1888. For the details of my experiments concerning the value of a daily toilet of the nasopharynx by means of mild antiseptic lotions I must refer to the communication quoted above. In a second communication on the same subject, made to the American Pediatric Society, September, 1889, I took occasion to reiterate my former statement at the hand of a large experience, partly my own and partly the experience of others who had given the method a trial.

Dr. Irvan H. Hance reported, at a recent meeting of the Pediatric Section of the New York Academy of Medicine, that he had carried out my suggestions as to personal prophylaxis at the Nursery and Child's Hospital, New York, during his term of service, and that he is satisfied that good results have been obtained thereby. He says, "When I took charge of



the cases in the Nursery and Child's Hospital there was an epidemic of diphtheria in the house, which had started in October, six to eight weeks previous. During that time and up to the first of December there had been eighteen deaths. Special attention was given to the cleanliness of the children's mouths, the older ones having teeth and gums washed with solutions of boracic acid (saturated), and the throats of all in the exposed wards were sprayed with solutions of chlorate of potassium or boracic acid.

"During the subsequent thirty-five months of my service there was *no other epidemic of this disease*, yet the disease was met with from time to time, there being eight deaths during this period at rather long intervals.

Causes of Death.

December 23, 1885.....	Diphtheria.
January 7, 1886.....	Diphtheria (adult).
January 15, 1886.....	Diphtheria.
May 8, 1886.....	Diphtheritic croup.
June 25, 1886.....	Diphtheritic croup.
October 26, 1886.....	Scarlet fever and diphtheria.
February 17, 1887.....	Measles, broncho-pneumonia, diphtheria, tuberculosis.
February 19, 1887.....	Measles, broncho-pneumonia, diphtheria.

"During all this time there were always as many as two hundred children daily in the house, and oftentimes many more.

"This great immunity was undoubtedly due to the care and attention given to the children's throats, which were looked at and examined and sprayed twice a day, and in the infected wards oftener. Apart from the local effect derived from such spraying and swabbing as a prophylactic, the treatment is to be highly recommended and urged upon the laity, as inflamed throats are detected during the incipency of the disease, and general treatment is begun earlier and with manifestly better results."

At the present time my conviction is firm that, in the absence of filthy carious teeth and nasal obstruction from adenoid vegetations or greatly-enlarged tonsils, the daily pro-

longed use of mild antiseptic liquids, by means of spray, insufflation, or gargling, will prevent diphtheritic infection.

And I claim that this procedure is indicated for those who are exposed to diphtheritic infection, and also as routine treatment for every case of *nasal catarrh*, *pertussis*, *measles*, and *scarlet fever*; in fact, for every condition in children in whom the naso-pharyngeal mucous membrane is hyperæmic or congested, and therefore predisposed to diphtheritic infection.

And I wish to emphasize, in conclusion, that diphtheria, although its contagiousness is well established, is not so readily transmissible as scarlet fever and other infectious diseases; and for this reason, if for no other, the possibility of its occurrence and prevention should stimulate the prophylactic energy of the practitioner in medicine.

#### RÉSUMÉ.

1. In the present state of our knowledge, the possibility of preventing diphtheritic sepsis cannot be denied.

2. As one of the means of securing this end the daily inspection of school-children is necessary.

3. The municipal control of diphtheria in large cities is inadequate, and methods of personal prophylaxis are more apt to prevent infection.

4. A daily prolonged toilet of the naso-pharynx by means of weak antiseptic solutions is a trustworthy method of prevention in the absence of filthy carious teeth and enlarged and inflamed tonsils.

5. The naso-pharyngeal toilet is indicated for all those who are exposed to diphtheritic infection, and also as routine treatment in every case of chronic naso-pharyngeal catarrh, pertussis, scarlatina, and measles.

6. It is, in my opinion, the duty of the authorities and the medical practitioners to act in accordance with the above views.

#### DISCUSSION.

DR. EARLE.—These two papers are very, *very* important. We could spend half a day very profitably in discussing them, and then go home and do a little missionary work in our respective cities. It is very well to talk about health boards

doing what you suggest. They do not do a hundredth part in my city. Why, there are some men in our own profession who do not believe in the contagiousness of diphtheria, in the first place. We need to do a little missionary work among them. We want to get the medical profession right in the first place, and then we can talk to the people. It was my pleasure a few months ago to read a paper before the Chicago Medical Society, on the contagiousness of diphtheria, and then I was going to introduce a resolution with regard to placarding houses, but as the situation seemed doubtful, I thought it expedient to have my resolution laid on the table until two weeks from that time. Then I read a paper on municipal control of contagious diseases, and had fortified myself, got in some of my friends, and after reading my paper introduced my resolution, and it went through. Since then we have placarded a few houses where diphtheritic patients have been confined, but really only a very small percentage of all. That the Health Department does not in any considerable degree disinfect these houses is strictly true. I really think the Health Department does not care particularly about being informed. It is expected that they will go around and disinfect houses, but I think we shall have to force them to do it. The first of May I had in our town a case of diphtheria. The people were going to move, and I asked them whether the parties who were coming into the house knew anything about the nature of the disease. They said they did, but I took the pains to invite the Health Department to notify the people who were to come in what had been there, and I presume sufficient care was taken so that the poison was destroyed. But we have to agitate this matter a great deal before we can accomplish what should be done. And it appears to me that if we promulgate the papers read before this Society to-day we can do a great amount of good.



## THE USE OF ALCOHOL IN THE TREATMENT OF THE DISEASES OF CHILDREN.

BY A. SEIBERT M.D.,

New York.

It can have no bearing on this discussion to know that persons exist who believe that alcohol ought not to be used as a medicinal remedy any more than as a beverage. We are not here to discuss religion or belief, but science and facts. Alcohol is a drug and a very valuable one. So is opium. We would never think of not using opium because so many acquire the opium or morphia habit.

We are not able as yet to exactly determine the full action of alcohol in disease in every direction, any more than that of many other drugs, and necessarily our views will be modified by the extension of our knowledge, and therefore we may exchange our experience, on an occasion of this kind, with great profit to ourselves and our patients.

The chief action of alcohol on the human body, if given in moderate doses, is a stimulating one, and, as Binz (in Gerhardt's *Cyclopædia of Diseases of Children*) has it, favorably influences the nervous system, the circulation, and the digestion.

This statement may serve as a basis for the few remarks I have to make.

1. The *nervous system* is no doubt acted upon by alcohol, as it excites the nerve-centres over and above their normal action, and causes a degree of anæsthesia to the action of most pathogenic germs in the body, that we are fully justified in attempting to *counteract* the *nerve-depressing influence* of many germs of disease, as in typhoid fever, scarlatina, intermittent, and some forms of pneumonia.

2. *The organs of circulation* respond very markedly to the administration of alcohol. The heart itself is able to do more and better work under its limited influence in disease than without it. We therefore are inclined to give alcohol in such diseases of children in which we know that the heart-muscle

will be strained to an unusual degree,—diphtheria, scarlatina, fibrinous pneumonia.

3. *The digestive organs* are said to be also favorably influenced by alcohol. Undoubtedly they are excited to increased action, like other functions of the body, but digestion itself is *not promoted* by alcohol; on the contrary, it is interfered with directly in the stomach, and retarded by its general action throughout the alimentary canal. In a series of experiments made some five years ago in the Physiological Institute in Munich, and published in the *Archives für Hygiene*, Dr. Limanowski proved that meat could be best acted upon by the gastric juice when alcohol was not present. Regarding beer *per se*, he found that three different blocks of meat, of the same fibre and size, placed in the same quantity of stomach-juice were macerated evenly, provided nothing interfered with them, but on adding a small quantity of clear fresh beer to one block and the same quantity of slightly opaque stale beer to the other, he found that the piece without beer was macerated quickest, the piece in the fresh beer coming in considerably later, and the one in the fermenting beer remaining far behind in the race.

But not alone does alcohol interfere with the action of the gastric juice, but it also caused a catarrhal condition of the mucous membrane of the stomach by irritating its surface, resulting in an insufficient supply of digestive fluid and an abnormal secretion of mucus, thus seriously interfering with the assimilation of food. Other experimenters have since corroborated the results of Limanowski. The glass of wine at dinner excites the secretory glands of the stomach to abnormal action, but in the end retards the maceration of food.

Keeping these facts in mind, we may now proceed to answer the following questions:

1. When shall we give alcohol in the diseases of children? We ought to use alcohol whenever danger threatens from insufficiency of the heart, muscles, and depression of the nerve-centres, especially in acute infectious diseases, in which the blood and other tissues are invaded by pathogenic organisms. Whether or not alcohol may, to an extent at least, have germicidal properties in the circulation we are as yet not prepared to say, though to judge by recent developments in bacterio-

logical research, the quantity of alcohol brought into the circulation is necessarily too small to really cause an antiseptic action.

We ought never to use alcohol in affections of the stomach, and never whenever it is still possible to nourish the patient. Alcohol is a substitute for nourishment, but not its promoter. In acute cases (diphtheria, scarlatina, and typhoid) I never put alcohol in the stomach of a child as long as digestion is possible, only resorting to it when other food is not taken. In chronic cases I never use alcohol in any form, tuberculosis excepted. The body is built up and maintained by food, and it is our duty in all cases to carefully guard those organs and their functions that carry food to the tissues. If these parts are in a pathological condition, we must interfere with their functions less than ever, and so we can exclude all forms of gastro-intestinal disturbances in infants from the list of diseases where alcohol is beneficial. In acute cases of this kind (cholera infantum) large quantities of water, and smaller quantities of black tea or coffee, will disinfect and stimulate more efficiently than any quantity or quality of alcohol, besides not irritating the mucous membrane, already in a diseased condition. In subacute and chronic gastro-intestinal disorders, the proper management of the proper diet can alone be of benefit, and all drugs, alcohol included, are at least of very doubtful value. To give anæmic children wine because they look pale is an unscientific and superficial therapeutic order that will in most cases be not only found unnecessary, but harmful. Here too the first rule ought to be to bring back the digestive power of the stomach, and then to add wine to the food, when the stomach is able to overcome its irritating influence with less harm.

2. *How shall we administer alcohol?* As to the form, I will briefly admit that, in acute infectious disease, I prefer rye whiskey to anything else. The children may be bathed with it, or it is given in some gruel by an enema into the bowel. Now and then it may be found necessary to use wine. The sweet Hungarian Tokay wines are certainly very palatable, but interfere still more with stomach digestion than whiskey, on account of the large quantity of sugar or glucose they con-



tain. For years I have been able to do the most of my stimulating by the injection of alcohol (sometimes in combination with camphor) into the large bowel.

As to the time of giving alcohol, it appears best to begin *early* in infectious troubles, gradually increasing the dose, and where the blood seems to be the chief region for the action of the disease-germs, and we are not alone justified, but, in fact, ought to give large and frequent quantities of alcohol.

As to the exact quantity to be given, we can only emphasize that we ought to be guided only by the severity of each case and the size and bodily condition of the child, not so much its age. As a rule, most practitioners omit to give exact instructions as to the quantity of alcohol to be used in twenty-four hours, and, generally speaking, too little of it is used when needed. The maximum dose I use is at the rate of a pint of the best rye whiskey or cognac to every one hundred pounds in twenty-four hours.

So, on summing up, we may say, generally speaking, alcohol should only be used as a stimulant in acute infectious diseases of children, and then in large quantities, and, if possible, should never enter the body through the stomach.

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## THE USE OF ALCOHOL IN THE TREATMENT OF THE DISEASES OF CHILDREN.

BY JOSEPH E. WINTERS, M.D.,

New York.

I HAVE not found that I know enough about this subject to write about it. Since leaving this hall, at six o'clock this evening, I have been thinking over what rules have guided me in the use of stimulants in diseases of children, and the first conclusion which I came to was that, as to the time when stimulants are to be given or the quantity in which they are to be employed, no definite rule can be laid down. We must individualize, each case must be treated for itself. That is about the most important rule which guides me. I find that in practice I make a very great distinction according to whether

the alcohol is intended to affect the heart and circulation or whether it is intended to act indirectly as a tonic. In the first place, it is used as a heart-stimulant to tide over an emergency, especially in pulmonary diseases. In the second, we wish to stimulate the secretions, promote digestion and assimilation, and aid other drugs in these directions. Stimulants are used for this purpose during convalescence from acute diseases. In pulmonary affections I find that I use a great deal of alcohol in combination with extract of malt and cod-liver oil. By the use of two parts of malt extract and cod-liver oil, and one part of whiskey, given in drachm doses every two hours, I find a valuable tonic effect during convalescence from acute disease in children, especially bronchitis and broncho-pneumonia.

With reference to the use of alcohol in acute pulmonary affections, it depends upon whether we are treating a lobar pneumonia or a broncho-pneumonia. It seems to me alcohol is scarcely ever called for in acute lobar pneumonia of childhood as a heart-stimulant. It may be used as a tonic, combined with cod-liver oil and malt extract, when there has been delayed resolution and convalescence.

In broncho-pneumonia I do not use it, as a rule, until the inflammatory stage has pretty well passed, excepting in cases of progressive broncho-pneumonia, which spreads somewhat slowly through all parts of the lungs. But in pulmonary affections, in which the superficial veins become full, accompanied by cyanosis, of course all use alcohol early and constantly. Whenever, in the course of a broncho-pneumonia, the symptoms appear to be improving, the cough loosened and much less distressing, but on examination we find the physical signs in the chest persisting or increasing, alcohol is indicated, and in full doses. Again, in broncho-pneumonia, and in all pulmonary affections in which the abdomen becomes distended and there is great flatulence, which is as dangerous a symptom as any of heart-failure, stimulants are of very great value.

In any case of acute disease, where there is very great restlessness, and sedatives fail to soothe and quiet, alcohol as a rule will have that effect. But in this use of alcohol we are treating the temperament of the patient, not the disease. But where

there is restlessness and tendency to local spasm, with injection of the conjunctival vessels, alcohol is contraindicated. It is also harmful in delirium, with injection of the conjunctival vessels and congestion of the surface.

When, during the use of alcohol in the course of an acute disease, vomiting has come on, I have often found the latter cease only after discontinuing the alcohol. In giving stimulants to children, I have found that, while champagne usually agrees well with adults, it scarcely ever agrees with these young subjects. In infectious diseases, with the exception of diphtheria, I scarcely ever use alcoholic stimulants. In diphtheria I do not begin their use at the outset of the disease, but am entirely guided by its course, and especially by the state of the circulatory and nervous systems.

#### DISCUSSION.

DR. HOLT.—I have only one remark to make. It concerns the very large quantity of alcohol which young children tolerate during diphtheria and broncho-pneumonia. I am almost afraid to mention the amount of alcohol which I have given some young children. Recently I treated a baby two months old, weighing about seven pounds, for a severe broncho-pneumonia. The child took for twenty-four hours a teaspoonful of whiskey every half-hour, and for the two succeeding days almost as much. To a boy sixteen months old at the Infant Asylum, who had first pneumonia, followed by pleurisy with effusion, and then diphtheria, all in the course of a few weeks, with complete recovery, we gave half a pint of whiskey a day for several days; this, too, without producing any cerebral symptoms, although they were carefully watched for. It seems to me, therefore, that we should be guided in dosage by the effect produced, and not by any preconceived ideas as to how much the child ought to have.

DR. FRUITNIGHT.—To make a general rule to give alcohol in all cases of certain diseases is, I think, a great mistake, a mistake which has been made by not a few. I have also seen some cases in which there was marked tolerance of the drug. I have seen young children consume as much as a quart of brandy in twenty-four hours. The disease was diphtheria with marked toxic symptoms. Alcohol I regard as not only a stimulant, but as an antidote to symptoms of toxæmia in that disease, and administer it accordingly.

DR. VAUGHAN.—I am rather sceptical as to medicines, and



use but few, but alcohol is one that I believe in. I agree with Dr. Seibert when he says it is to be used as a medicine, and not as a beverage or food. But in the treatment of mild cases of diphtheria, and more especially in the typhoid fever of children, there has been no other remedy at my command so good as alcohol. In the typhoid fever of children the temperature often runs up as high as 105° to 106° F. Antifebrin will bring it down, but that is all the good it accomplishes, while it is liable to cause serious disturbances. Alcohol will not lower the temperature by any means as much as antifebrin, but it will bring it down a degree or two, and the patient sleeps better and takes his food better. In fact, I have never treated a case of typhoid fever in children without alcohol, so pleasant has been my experience with it. The same is true of milder cases of diphtheria. Where it disturbs the stomach it should be stopped, but I have never yet seen a case of typhoid fever or diphtheria in children in which it did cause disturbance of the stomach. I do not agree with Dr. Seibert that it should not be given by the stomach; I have never given it in any other way. Of course in adults we meet with cases in which it causes disturbance, and I agree with him that it should not be used where there is digestive trouble. There is no question but what alcohol is burned up in the body, especially when administered in the fevers. This was proved a long time ago, so that it cannot be doubted but what it preserves the tissues.

THE PRESIDENT.—Does Dr. Vaughan limit the use of alcohol in diphtheria to the mild cases?

DR. VAUGHAN.—It is the only thing I use in mild cases. Larger quantities are called for in severer cases, and other things as well.

DR. CHAPIN.—It is by diverse opinions that we sometimes reach conclusions. In my opinion, if there is any one disease in which alcohol is not necessary, it is typhoid fever in children. In the vast majority of cases it is an exceedingly mild disease, and, it seems to me, we do harm in giving alcohol to children when it is not necessary. I have seen a considerable number of cases of typhoid fever in children, and have never seen a death, and have never had a case in which I gave alcohol. In the milder cases of diphtheria I never give alcohol. I think we need to use alcohol, as one of the speakers has said, as a drug, and give it only when there is a direct indication; for instance, when the heart fails or when there is some grave toxic symptom. When indicated it is exceedingly valuable.

DR. VAUGHAN.—There are typhoid fevers and typhoid fevers. In Michigan I have found typhoid fever in children

severe, and the temperature running often as high as  $105^{\circ}$  and  $106^{\circ}$  F., consequently my experience has been different from that of the last speaker.

DR. ROTCH.—It is an interesting statement that typhoid fever is of two different types in different parts of this country. In the East, I think, it is rather an aborted type compared with the disease as it appears in the adult, and we seldom expect a child not to recover from it. Put the children in bed, give them a milk diet, and they get well. I think it is very interesting indeed if there is an entirely different type of the disease in the West. Of course it would indicate different treatment.

DR. VAUGHAN.—In Michigan typhoid fever often runs forty-two days in children.

DR. CHAPIN.—I very rarely see a case last longer than three weeks, and the temperature does not usually go above  $101^{\circ}$  to  $102^{\circ}$  F. I have seen a good many cases of this character, and have simply put the patients to bed and given them milk.

DR. ROTCH.—The pathological changes have been noticed to correspond with the symptoms in mildness in the East, and the same thing has been observed in France. At one time it was supposed that Pyer's patches were not involved in infants, but it is now well known that they are. But the proliferation of cells in Pyer's patches does not go nearly to the extent that it does in the adult, and does not lead to ulceration. Therefore it is extremely seldom to get perforation and hemorrhage in infants, and the disease in them runs a shorter course, sometimes only ten days. Of course there are some cases in which the temperature runs high, but the general type of the disease is very benign.

DR. CHAPIN inquired of Dr. Vaughan whether he had made any autopsies.

DR. VAUGHAN.—My cases get well. In many places in Michigan cistern water is used, and in the majority of cases of typhoid fever which I have seen cistern water was drunk. Perhaps that has something to do with the type of the disease. We call it typhoid fever. I have studied these waters diligently for germs, also the fæces of the patients. There is a germ in the water which will kill rabbits and rats every time, but it is not Eberth's germ. I believe there are different kinds of typhoid fever. The children out there do not die, but they have a great deal of delirium and high fever from the very outset; there is no eruption.

DR. CHAPIN.—Last summer I was in Michigan, in a town called Iron Mountain, where there was a severe epidemic of

typhoid fever, fatal among adults, but I was told by some of the physicians that children were not very susceptible to the poison.

DR. A. JACOBI.—We have heard some of the indications for the use of alcohol in the diseases of children. I will mention some of the contraindications, and I do so because I remember a great many mistakes committed by others and myself. In fact the most inexcusable mistakes which I have seen made in the administration of drugs have related to alcohol. For instance, in most cases of brain-disease and brain symptoms to which I am called alcohol has previously been given. Alcohol has no business in the inflammatory diseases of the brain; it has no place in the treatment of kidney-diseases, either acute or chronic. If young physicians will remember these facts they will, I think, derive some benefit from this discussion.

But there are a great many cases in which alcohol can be given with advantage,—in convalescence from certain diseases and in chronic anæmia. But it should be diluted, for undiluted spirits or strong wine will certainly, as Dr. Seibert has said, affect the digestive powers of the stomach. But where there is no normal secretion of gastric juice diluted alcohol will certainly stimulate it. Then, in the anæmic person, old or young, there is not blood enough left from which to obtain gastric juice, and besides giving alcohol the digestive powers should be aided by pepsin and hydrochloric acid.

I also join those who have recommended large doses of alcohol in infectious diseases. But if you call rheumatism an infectious disease, there it should be avoided. When there is an inflammatory irritative condition of the heart, alcohol will do harm, but when we have simply to do with insufficiency of the muscle, it will do good. In rheumatism, then, where there is always danger of endocarditis, alcohol will do harm. It will be of benefit in many cases of erysipelas. It will not do to administer it in those cases of scarlet fever in which there is so much tendency to brain disturbance. In short, wherever there is a brain affection alcohol ought to be avoided and some other stimulant take its place. These other stimulants are, particularly, camphor,—camphor in good doses.

In diphtheria you can not give too much alcohol. I pointed out that fact twenty years ago or more. You seldom succeed in making a baby with diphtheria intoxicated. When it becomes intoxicated it is about time to stop, for it is a sign that it is on the way to convalescence. I have found in many cases that where whiskey was not tolerated so well there was not much need of it, and I stopped it.

Another remark I would make is this: it is all very well to



say not to give medicines unless there is an indication, but it depends on what you consider an indication. An indication for a stimulant certainly arises when heart-failure sets in, but then it is generally too late. The stimulant is indicated before heart-failure sets in. When you have to do with a disease which must necessarily last a time, and is known to have a tendency to produce heart-failure, it is much better to take time by the forelock, and not wait until you have heart-failure, for then it is likely to prove too late.

THE PRESIDENT.—I would ask Dr. Jacobi whether he does not think it too sweeping an assertion to say that alcohol should never be given in cerebral or meningeal inflammations. Within a week I have at my first visit in a case of cerebro-spinal meningitis advised the use of alcohol. The temperature of the patient was subnormal, the tongue brown, the extremities cool, the pulse a mere flicker; the disease had continued only two or three days. I depended upon brandy as the chief remedy. Should there not be an exception in a case like this? The patient had meningitis from a microbic cause, and was in a state of such extreme prostration that death was liable to occur at any moment. The patient was too weak to rise from the bed, or even to turn in bed without help. Frequent moderate doses of brandy with the cardiac tonics apparently prolonged life.

DR. JACOBI.—That looks like an exception; but I should prefer some other stimulant to alcohol even there. There is only one remedy which I fear as much as I do alcohol in inflammatory brain diseases, that is caffeine. I have used a great deal of alcohol and a great deal of caffeine, but I avoid them under the circumstances I have pointed out. When a general stimulant is indicated; when there is not only a flickering pulse and heart-failure, but the possibility of brain irritation is present, would it not be better to give camphor, or camphor with sparteine? It is not necessary to wait for the action of the stimulant given through the mouth. When the whole system is depressed, the pulse but a flicker, we cannot expect the stomach to secrete gastric juice to digest food, or to absorb anything which may be sent into it. Therefore it is that so many remedies, whether given in small or large doses, are absolutely inert. The stomach does not know what to do with them. In the case described by the president I should use camphor subcutaneously. Where death is imminent it cannot be better averted than by giving a medicine subcutaneously. Dr. Earle will forgive me for advising this mode of administration, which after all is but seldom painful, for it is certainly better to give medicine under the skin than to write a certificate of death.

## A FATAL CASE OF PURPURA, WITH A FEW NOTES ON THE RECENT LITERATURE OF THIS DISEASE.

BY HENRY JACKSON, M.D.,

Boston.

ON June 13, 1888, I was called to see a boy five years old, who lived in a house with good hygienic surroundings. The house was situated on a wide street, on the sunny slope of a hill. The parents were in good circumstances, and the boy well cared for in all respects. His previous health had been good. In the latter part of May he had a mild attack of measles. Since June 10, his mother had noticed that he did not seem well. He had been "feverish" at night, had been constipated, and on the previous day she saw a few hemorrhagic spots. He had not been confined to the bed since the attack of measles, mentioned above, and at the time of my visit was playing in the yard.

*Physical examination.*—The child did not appear sick; his color was good; he was rather peevish, otherwise nothing abnormal was noted in his general appearance. Examination of heart and lungs negative. Pulse, 80; temperature, 99.5.

On the legs were numerous small hemorrhagic spots, a few on the back; several of the spots were half an inch in diameter. On the lower lip was a small hemorrhagic bulla. During the day he passed a little blood with a dejection; in the evening there was no material change in the boy's general condition. Pulse, 100; temperature, 102.

*June 14.*—Having passed a good night, he had at 6 A.M. a sudden profuse nose-bleed, accompanied by vomiting of blood; at 10 A.M. there was a recurrence of the hemorrhage. At 11 A.M. his pulse was 180, small, and very hard to count; his countenance was pale, and the mucous membranes were livid. The hemorrhage had been so profuse that the child and the room were literally covered with blood. He hardly spoke, and made no complaint of pain. There was no evidence of intercranial hemorrhage. Through the day he had several

attacks of nose-bleed, vomited blood, and passed blood from the bladder and bowels.

*June 15.*—The hemorrhages from the mucous membranes continued; temperature subnormal; pulse very small and thready; skin cold and clammy. He was apparently moribund.

*June 16.*—The hemorrhages from the nose, stomach, bladder, and bowels continued. The spots on the skin had increased in number, and on the legs were numerous large confluent patches of hemorrhage. The pulse could scarcely be felt; temperature subnormal; extremities very cold and clammy. Death at 6 P.M. No autopsy allowed.

We have here a case of purpura in a child previously healthy, ending fatally on the fourth day from hemorrhage from the mucous membranes. I consider this case as properly belonging to the type of purpura recently described as purpura fulminans, though it differs from the typical cases of this variety in that extensive hemorrhages from the mucous membranes were associated with the wide-spread purpuric eruptions of the skin.

This form of purpura is mentioned by Van Harlingen in Keating's "Cyclopædia of the Diseases of Children," and spoken of as very rare.

Under the name purpura is classified a disease, or, perhaps, a group of diseases, whose chief manifestation consists in the occurrence of hemorrhages of various size on the skin or mucous membranes. It must be diagnosticated from petechiæ, occurring secondarily in the various acute infectious diseases, measles, scarlet fever, small-pox, etc., septicæmia, malignant endocarditis, or in poisoning from certain drugs. Wide-spread lesions, due to flea-bites, may closely simulate purpura, though this condition is rarely met with in this country.

As to the nomenclature, I quote from Carl Koch, who says (*Jahrbuch für Kinderheilkunde*, Bd. xxx., S. 403), "In the Nicolai Hospital we no longer distinguish, as formerly, purpura simplex and purpura hæmorrhagica, or morbus maculosus Werlhofii, but we include both forms, which differ only quantitatively under the name purpura. Herein we follow the example of most modern authors." Koch gives a valuable aid



to diagnosis in doubtful cases ; as in purpura a slight prick of a pin is followed in a day by a well-marked hemorrhagic spot, he chooses a place free from any lesion, and makes five very slight pricks, as in the diagram, in a geometrical figure ∴. On the following day these points will be marked by five well-defined hemorrhagic spots. Also slight pressure, as from a small coin bound firmly on the skin, gives rise to a hemorrhagic spot.

During the last few years two diseases have been described, and, on account of the occurrence of petechiæ in each, placed under the head of purpura,—namely, purpura fulminans (Henoch) or purpura foudroyant (Hervé), and a form, described by Henoch, as occurring with pains in the joints, large hemorrhagic areas, and attacks of colic, accompanied by vomiting of blood and bloody diarrhœa. In the latter form the chief characteristic is the recurrence of the attacks of gastro-intestinal disturbance at intervals of one or more weeks, often for several months. V. Dusch (*Deutsche Medicinische Wochenschrift*, 1889, S. 918) gives two cases, both ending in recovery, and suggests as appropriate the name purpura recurrens. Henoch has had two cases of this nature, which ended fatally ; but, as there was no autopsy in either case, he is unable to give an opinion as to the cause of the gastro-intestinal hemorrhage, purpura fulminans or purpura foudroyant.

Under this head a few cases have been described in the last three years. All the cases are similar in several important points : 1. Sudden onset of the disease without prodromata. 2. Usually pain in one or more of the limbs. 3. In addition to the purpuric spots of the usual size, the legs, or occasionally an arm, have been found swollen, œdematous, and dark purple. 4. Absence of hemorrhage from the mucous membranes. 5. Death in twenty-four hours to three or four days. In three reported autopsies no sufficient cause of death was found. Henoch (*Berliner Klinische Wochenschrift*, No. 1, 1887, S. 8) reports two cases of his own, and speaks of two others under the care of Charron and Michaelis :

I. Boy, five years old, on second day after the crisis, in a normal case of pneumonia, had suddenly pain in one leg, followed in a few hours by a large purpuric spot on the thorax.

In a few hours there were large and numerous hemorrhagic spots all over the body; the right leg became cold, oedematous, and dark purple. Death in twenty-four hours.

II. Girl, two weeks after scarlet fever; suddenly numerous small hemorrhages in the skin; left arm dark bluish; both legs oedematous and swollen. Death in twenty-four hours. As in the previous case, the autopsy gave no sufficient cause for death.

Strøm (*Jahrbuch für Kinderheilkunde*, Bd. xxvii., S. 180) and Arctanda (*Ibid.*, S. 181) give similar cases.

Rinonapoli (*Archivio di patol. Infant.*, 1887, p. 200) gives the following case: A healthy boy, two and a half years old; no previous illness. He had suddenly a swelling of the right knee, which, at first red, became dark purple. Two days later there was an abundance of petechiæ and black all over the body. Death on third day. Autopsy gave no sufficient cause for death.

Hervé (*Rev. Mens. des Mal. de l'Enf.*, April, 1888) gives a similar case, which Van Harlingen has reviewed in Keating's "Cyclopædia," vol. ii. p. 83.

Gueilliat (*Union Med. du Nord Est*) reports two cases.

In all, I have found ten cases or reports of cases.

It remains for future investigation to determine whether these cases have etiologically and pathologically any connection with purpura, or whether they represent some as yet unknown general infectious disease, whose chief symptom manifests itself by the occurrence of petechial hemorrhages similar to those of purpura.

*Etiology.*—In speaking of the etiology of purpura, Ziegler says, "Its cause is unknown." The sudden onset of the disease, often in individuals in perfect health, the occasional occurrence in mild cases of constitutional symptoms, and the occurrence of the rapidly fatal cases to which reference has been made, render it probable that we should class purpura among the infectious diseases. The following theories as to the cause of purpura have been suggested: 1, changes in the blood; 2, changes in the walls of the capillaries; 3, vaso-motor disturbance; 4, micro-organisms.

It has been pretty satisfactorily determined that there are no changes in the blood itself in purpura, either as to its

power of coagulation or as to the size and number of the red and white blood globules, except in so far as the blood has been secondarily affected by prolonged hemorrhage.

It has been claimed by some pathologists that changes exist in the walls of the minute blood-vessels, especially endarteritis or colloid degeneration. The clinical history of most cases of purpura suggests that such changes, if they exist, are secondary to and not the cause of the hemorrhage, as it is difficult to understand how a disease, so rapid in its onset as purpura, could be due to a chronic endarteriitis. Köjerer (*Zeitschrift für Klinische Medicin*, Bd. x. S. 23), after giving quite a full review of the etiology of petechial hemorrhage, gives a minute account of his examination of petechiæ in thirteen cases of hemorrhage of various origin; his analysis includes an examination of two cases of purpura. In all cases he found endarteriitis, minute thrombi, and extravasation of blood and blood-pigment.

In 1869, Weir Mitchell published in the *American Journal of Medical Science* an article on "Purpura as a Neurosis," in which he described two cases which he considered to be of nervous origin. In each case there was redness and some pain, followed by hemorrhagic spots. While preparing this paper, I had the opportunity of observing in my own child a simple case of purpura, which I watched from hour to hour. She is a girl twenty-three months old, who has never been sick except in February, when she had a mild attack of measles. On April 7 she suddenly complained of pain in her left foot and right ankle. At these points there was a slight blush with swelling. The redness and swelling disappeared in half an hour, leaving a faint bluish discoloration. During the next few days several similar spots appeared on various joints, also a few petechiæ scattered over the body. After fifth day no new spots. No changes in her general health during the attack.

The occurrence of such cases where there is evidently some disturbance of the vaso-motor nerves, as evidenced by the pain and the preceding blush, and the usual rapid onset of purpura, render it probable that the petechiæ in purpura are in the main dependent upon some disturbance of the vaso-



motor nerves. Physiological experiment has shown that lesions of the brain, cord, and sympathetic ganglia may all be followed by petechial hemorrhage in distant parts of the body. The theory advanced of the nervous origin of purpura is by no means opposed to the supposition that purpura is a disease of infectious origin, dependent upon micro-organism as an ultimate cause of the disturbance of the vasomotor nerves.

Micro-organisms have been found in the blood and tissues by numerous observers. Watson Cheyne (*Brit. Med. Journ.*, 1884, vol. i. p. 362) has found micro-organisms in two cases of simple idiopathic purpura, in one case bacilli and in the other cocci. Similar observations have been made by Balzer, Klebs, and Letzerich.

Two men, Petroni and De Guimard, have found micro-organisms in purpura, and succeeded in reproducing the disease in animals by inoculation.

In neither case have I had the opportunity of consulting the original article, but have found reference in Schmidt's *Jahrbuch* of 1888-89.

Petroni (*Rivista Clin. di Bologna*, 1883) injected blood from cases of purpura into rabbits and guinea-pigs, with the result of producing wide-spread purpura, which could be transferred through several generations. In the blood and internal organs Petroni found micrococci, easily stained, which he could cultivate on nutrient media. The work of Martin de Guimard (*Thesis*, Paris, 1889) appears to be more reliable than that of Petroni. De Guimard examined twelve cases of purpura, occurring in one of the children's hospitals of Paris. These cases varied in type from the mildest form of purpura to the most severe, ending in death in a few days, as in the cases described as purpura fulminans. In all he found micrococci in the blood, subcutaneous tissues or submucous tissues. Cultures of these cocci were made, and found to produce purpura on injection into rabbits. So far as I have been able to find out, De Guimard did not inject the blood from cases of purpura directly into animals, but used only his cultures as a medium for inoculation; and herein his experiments are more reliable than those of Petroni.

To sum up : Purpura is a disease manifesting itself clinically in petechial hemorrhages of greater or less size and number. Its pathological cause may be found in some lesion of the vaso-motor nerves, which recent investigations have shown to be possibly, and perhaps probably, due to the invasion of micro-organisms.

#### DISCUSSION.

DR. EARLE.—A question has arisen in my mind as to a possible cause of a fatal case of purpura hæmorrhagica in a patient which recently came under my observation. It was in a child whom I had treated for whooping-cough the past winter. During the course of the treatment, inhalation of carbolic acid and tincture of iodine were freely used.

Remembering that carbolic acid poisoning sometimes occurs from the use of the spray, the question suggested itself whether this agent may not have produced a change in the blood favoring or producing purpura. I would ask whether any of the members have had experience in this direction?

DR. BOOKER reported a fatal case of hæmatophilia in a child eight months old. There was no history of bleeding in the family.

The child was recovering from an attack of summer diarrhœa. It was reduced in flesh but not emaciated, and was very nervous and restless. The four central incisors had cut through the gums; the gum covering the two upper lateral incisors was swollen and hard. No spots were noticed on the body of the child, and the joints were not swollen or tender.

A superficial incision was made over the upper lateral incisors, from which a small quantity of blood was lost at the time. The oozing of blood continued, and all efforts to stop it proved unavailing.

The oozing was repeatedly checked for a short time by digital pressure, but would again break out, and sometimes, when checked over the incisions, the blood would ooze out between the upper central incisors and gum; and near the close this happened around the lower central incisors.

The child repeatedly vomited blood and passed it with the fæces.

On the second day bluish spots were noticed over the body and extremities. The blue color gradually changed to purple.

The pulse remained remarkably good for three days.

Death occurred on the fourth day. Autopsy showed nothing abnormal. The heart was healthy and of normal size.

Spots resembling those on the skin were noticed on the intestine and vermiform appendix.

DR. JACOBI.—One single remark. Nobody would now look for the cause of purpura in the blood. He would look for it in the blood-vessels. It must, then, be either in the anatomical structure of the blood-vessels or in an invasion by a micro-organism. There are a number of conditions in which severe bleeding has taken place and in which the anatomical state of the blood-vessels has been studied. For instance, the acute fatty degeneration of the newly-born, first studied by Buhl and Hecker. Here are found a large number of hemorrhages through the viscera, etc., caused by acute fatty degeneration of the epithelium and endothelium, and extending into the tissues proper. In purpura we may have—at least in some cases—a similar condition. I have not the slightest doubt, however, that in a number of cases we shall find the cause to be an infectious disease. Measles are known to affect the walls of the blood-vessels very much more than any other infectious disease. I remind you simply of the fact that noma is more frequent after measles than after any other disease. It occurs now and then, however, after typhoid and scarlet fever; thrombic deposits in the extremities and large hemorrhages of purpuric nature also occur after measles. I have seen a number of such cases, and others are to be found in the books and journals. Dr. Jackson has referred to two cases which occurred after measles. According to the pathological notions which prevail now, we believe there must be a bacterial invasion. It is possible the bacterial invasion of measles is exactly the one which predisposes the blood-vessels to become pervious.

DR. EARLE.—Are we to understand Dr. Jacobi to say that there is no change in the blood, particularly in the blood corpuscles, observable under the microscope?

DR. JACOBI.—What I meant to say was that, no matter what the condition of the blood, no change in it causes hemorrhage. In order to have hemorrhage there must be a change in the blood-vessels, whatever it may come from. That a change in the state of the blood itself will not cause hemorrhage is easily proved. For instance, a person may be either very plethoric or very anæmic, yet not have hemorrhage. The blood may be very watery, but hemorrhage will not take place unless the pipes burst.

DR. ROTCH.—This is an extremely interesting subject to me. I have not had time to publish my cases. I have yet to see a baby under one year, especially under six months, recover from purpura hæmorrhagica. And I have yet to see a



baby under two years affected by any other disease recover when attacked with this disease. I suppose we have to separate the hemorrhagic diathesis from purpura, at least at present. Purpura hæmorrhagica may possibly be not the follower of an infectious disease, but an infectious disease itself, the children dying because they are unable to withstand the amount of blood lost. The younger the child the less the amount of blood it can afford to lose.

In none of my cases, perhaps five or six in number, had there been any disease like measles. One especially was a blooming baby of six months; the mother and father both perfectly well and strong, with other strong children. The baby was taken down with purpura hæmorrhagica, and died within forty-eight hours. I stayed with it during that time, and was unable to do anything whatever to arrest the hemorrhage. I hardly believe carbolic acid had anything to do with Dr. Earle's case.

I wish much to know how to treat these cases. I have to go back to-night and see a little baby five months old, whose life I value more than that of any other patient, yet I believe it is developing purpura hæmorrhagica, and will die notwithstanding it is now taking its food and doing thoroughly well.\* It is an exceedingly fatal disease. How would you treat it?

DR. KOPLIK said that in intense sepsis there had sometimes been observed hemorrhages over the body, sometimes in the intestine; and some authors were disposed to look upon purpura hæmorrhagica as a species of sepsis. When Dr. Booker related his case he had involuntarily thought of sepsis taking place through the incision into the gums. There seems to be a change in the endothelial cells of the capillaries—or the cement substance between them—in this condition, which permits of a diapedesis of red blood-cells. I think that in the future we will look for some avenue of entrance of infectious matter which hitherto has escaped notice; in other words, for a septic cause. I need hardly mention the petechia occurring in connection with rheumatism as probably due to some *infectious* influence.

THE PRESIDENT.—Among other causes, in asylum practice, we recognize syphilis.

DR. FRUITNIGHT.—I can recall two cases which were most positively due to septic infection. Both occurred in the second week of life, anterior to the days of antiseptic practice. In one case there was over the left parietal bone a spot of ecchymoses as large as a silver dollar. There were smaller spots

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\* This baby died about three weeks later.

over the body, and spontaneous hemorrhage from the umbilical apperture. In the other there was malignant jaundice, and its system was profoundly affected with infectious material, besides, it had numerous purpuric spots over its body. Both mothers suffered from puerperal fever due to septic infection.

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## OBSERVATIONS UPON THE CAPACITY OF THE STOMACH IN INFANCY.

BY L. EMMETT HOLT, M.D.,

New York.

THE subject of the quantity of food to be allowed to artificially-fed infants is second in importance only to the character and preparation of the food given. It is only within very recent times that this factor in the problem has been deemed worthy of much consideration.

So many contradictory statements have been made by different writers with regard to the capacity and growth of the stomach in infancy that it has seemed worth while that this point should be made the subject of a special investigation.

Sound knowledge in this direction will certainly bring us a little nearer the solution of the difficult problem of deciding how much an infant, of a given age, is to be fed.

*Methods employed.*—The observations here recorded have been made at autopsy. It is not so simple a matter as might be imagined to arrive at accurate data regarding the size of this organ. Its walls are found at autopsy in conditions widely differing from each other; sometimes very flabby and altogether relaxed, containing food in large or small amount; sometimes so tightly contracted that its cavity is almost obliterated. It has been difficult to compare these two classes of cases. An amount of internal pressure, which would stretch a relaxed stomach to twice its vital capacity, is in many cases entirely insufficient to dilate a contracted organ to anything like its proper size. It was found thus to be unreliable and unsatisfactory to subject the organ in every case to the same

hydrostatic pressure. After numerous experiments the most satisfactory plan appeared to be the following: One orifice, usually the pyloric, was closed by a ligature, and water introduced into the other opening by means of a piece of rubber tubing attached to a faucet, at the other end of which was a glass nozzle, which was passed into the stomach, the cardiac orifice being pinched tightly around this by the fingers. After the contents had been evacuated, the water was allowed to flow very slowly and the stomach distended up to the point of obliterating the rugæ of the fundus and body of the organ. The walls in infants are so thin that it was found not difficult to determine when the proper degree was reached by looking through the stomach at a strong light. This proved quite satisfactory for those cases in which the stomach was contracted.

When the stomach to be measured was much relaxed, it was found that by allowing it to remain a day or two in fifty per cent. alcohol it could be much more easily handled, and the "bagging" from the weight of water contained usually avoided. This last feature mentioned was found a very serious obstacle in large stomachs, but unimportant in small organs.

These seemingly insignificant details are mentioned since, unless great care is taken, very misleading and erroneous results might be obtained.

*Results.*—In connection I have measured personally the capacity of the stomach in one hundred and forty-two infants. Thirty of the earlier cases I have not included in the tables, as the method of measuring was, I found later, not quite trustworthy. Of the remaining one hundred and twelve cases, seventeen were over fourteen months old, and distributed through quite a range of months.

There remain for study ninety-five cases of fourteen months old and under, and they are taken seriatim.\*

In the following chart can be seen at a glance the results arrived at in the individual cases.

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\* I wish to express my indebtedness for many specimens to Dr. W. P. Northrup, pathologist to the New York Foundling Asylum, and to Dr. Clarke, the house physician; also to Dr. W. F. Martin, curator to the Infants' Hospital on Randall's Island.



CHART

Showing age and capacity of stomach in ninety-five infants.

CAPACITY IN OUNCES.

AGE.	1	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12	13	14	15	16	17
Birth .....	4	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	[1]
Half-month .....	1	5	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
One month .....	1	1	2	1	...	...	...	...	[1]	...	...	...	...	...	...	...	...	...	...	...	...	...
One and a half months .....	...	...	3	6	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Two months .....	...	...	1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Two and a half months .....	...	...	...	...	...	1	3	1	1	1	1	...	...	[1]	...	...	...	...	...	...	...	...
Three months .....	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Three and a half months .....	...	...	...	...	...	...	2	1	2	...	3	...	...	...	...	...	...	...	...	...	...	...
Four months .....	...	...	...	...	...	...	...	1	...	...	...	...	...	...	[1]	...	...	...	...	...	...	...
Four and a half months .....	...	...	...	...	...	...	2	1	1	1	2	...	...	...	...	...	...	...	...	...	...	...
Five months .....	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Five and a half months .....	...	...	...	...	...	...	...	...	1	3	3	...	1	...	...	...	...	...	...	...	...	...
Six months .....	...	...	...	...	...	...	...	...	...	2	2	2	2	...	...	...	...	...	...	...	...	...
Seven months .....	...	...	...	...	...	...	...	...	...	1	1	2	2	...	...	...	...	...	...	...	...	...
Eight months .....	...	...	...	...	...	...	...	...	...	...	2	2	2	...	...	...	...	...	...	...	...	...
Nine months .....	...	...	...	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...
Ten months .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eleven months .....	...	...	...	...	...	...	...	...	...	...	1	...	3	1	...	...	...	...	...	...	...	...
Twelve months .....	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Thirteen months .....	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	1	...	...	...	...	...	...
Fourteen months .....	...	...	...	...	...	...	...	...	...	...	1	...	1	...	2	1	...	...	...	...	...	...

In four cases, indicated by brackets in the chart, the capacity so far exceeded all the other cases of the age that it was considered pathological dilatation, and these cases are not included in the table of averages given below, the object of the present inquiry being to discover the size of the organ in health.

TABLE

*Showing average capacity of the stomach in ninety-one cases.*

Age.	Number of cases.	Average capacity.	
Birth.....	5	1.2	Ounces.
Half-month.....	7	1.5	"
One month.....	4	2.0	"
One and a half months...	11	2.27	"
Two months.....	4	3.37	"
Two and a half months...	2	4.25	"
Three months.....	6	4.50	"
Three and a half months	3	5.00	"
Four months.....	4	5.62	"
Four and a half months..	5	4.50	"
Five months.....	4	5.62	"
Five and a half months..	2	5.25	"
Six months.....	8	5.94	"
Seven months.....	6	7.00	"
Eight months.....	3	6.66	"
Nine months.....	...	...	...
Ten months.....	5	8.40	"
Eleven months.....	2	7.50	"
Twelve months.....	1	9.00	"
Thirteen months.....	4	8.75	"
Fourteen months.....	5	9.00	"

} = 5 Average.

} = 5.75 "

} = 6.88 "

} = 8.14 "

} = 8.9 "

In looking at this table we are struck with the fact of the very rapid increase in the size of the stomach during the first three months. In this period it has quadrupled in capacity. From this time, however, its growth is much slower, so that in comparing the cases by half-months, the results seem in several cases to be contradictory; the average, for example, being less for four and a half than for four months, and less for five and a half than for five months. If, however, from three and a half months we group the cases by periods of two months each, as has been done in the right hand column, the regular but slower increase in size is at once apparent.

Taking into consideration the great distensibility of the stomach, the varying conditions in which it is found after death, the differences in children from whom the statistics are taken,—some nursed, others artificially fed, some dying of acute, some of chronic disease,—the variations found in children of the same age are not surprising; rather, they are just what would be expected. General correspondence, however, between the age and capacity is very clearly shown.

To formulate in a few words a general statement of the facts here brought together, we may say,—

1. That, starting at birth with a capacity of about one ounce, the stomach increases in size at the rate of one ounce a month during the first three months, reaching at this time about one-half the capacity seen at one year.

2. From three to eight months its growth is much slower, being, on the average, about half an ounce a month.

3. From eight to fourteen months the rate of growth is still less, being, on the average, about one-third of an ounce a month.

Approximately, at the ages of one, three, six, and fourteen months, the capacity is, respectively, one, four and a half, six, and nine ounces.

These figures express, of course, only averages. The usual variations met with above and below the average are indicated in the chart. It is to be expected that in unusually large children the stomach will be a little above, and in unusually small children somewhat below the average capacity. It was a frequent source of surprise that these variations were so small.

*The capacity of the stomach and the body-weight.*—The child's weight was obtained in seventy-five cases. The attempt was made to obtain the maximum weight during life, but circumstances made this impossible in many of the cases, so that we were often obliged to take the last weight before death. As some of the children died from acute disease after but a few days' illness, and others of chronic wasting diseases, such as athrepsia and tuberculosis, an element of uncertainty enters into the calculation upon this point, and the figures cannot be looked upon as altogether exact.



Eight children weighed seven pounds. The capacity of the stomach in one case was one ounce; in two cases one and a half ounces; in one case two ounces; in one case two and a half ounces; in one case four ounces; in one case five ounces; and in one case six ounces.

Ten children weighed eight pounds. The capacity of the stomach was in one case one ounce; in one case three ounces; in three cases four ounces; in one case four and a half ounces; in two cases five ounces; in one case five and a half ounces; and in one case six ounces.

Six children weighed nine pounds. The capacity of the stomach was in one case one ounce; in one case four ounces; in one case four and a half ounces; in two cases five ounces; and in one case eight ounces.

Seven children weighed ten pounds. The capacity of the stomach was in one case four ounces; in one case four and a half ounces; in one case five and a half ounces; in one case six ounces; in two cases seven ounces; and in one case eight and a half ounces.

Eight children weighed twelve pounds. The stomach held in one case five ounces; in one case five and a half ounces; in one case six ounces; in one case six and a half ounces; in one case seven ounces; in two cases eight ounces; and in one case ten ounces.

It is needless to multiply examples further. Enough have already been given to show that no inference as to the capacity of the stomach can be drawn from the body-weight.

*Practical deductions.*—It certainly does not follow that because the capacity of a child's stomach, at a certain age, is six ounces he should always and everywhere be fed such a quantity, regardless of other circumstances. We may, however, safely assume that the amount of food allowed for a single feeding should not be very much greater than the capacity of the average stomach at that age. It may be urged that milk or other fluid food passes so quickly from the stomach into the intestine that the size of the former is no guide to the amount of food which can be disposed of at one feeding. I am not aware that any one has as yet been able to measure how much actually passes the pylorus during the first fifteen or twenty

minutes, which is the average feeding-time for a child nursing or taking the bottle.

I have found by experiments with stomach-washing that, in infants with apparently good digestion, two hours were usually required before all the milk had left the stomach, in the case of infants of one or two months; in those of from five to eight months the time was generally about three hours.

Considering the changes which the milk undergoes in the stomach, it does not seem likely that any considerable proportion leaves the stomach before the meal is completed, certainly not enough to affect the conclusions here drawn.

It is of great interest to note in this connection the very close correspondence between the results here reached as to the size of the stomach and the quantity of food advised for a single feeding at the different ages by one who has studied with great care the question of infant-feeding in an experimental and practical way.

The amounts given by Dr. Rotch, in his article in Keating's "Cyclopædia" (vol. i.), are almost identical with my own findings in regard to the size of the stomach for the same age. We have both by entirely different paths come to the same conclusion.

It is undoubtedly true that many children take food greatly in excess of these amounts, some apparently without any harmful consequences, but this is by no means true of all. The stomach is an organ of extreme distensibility. I found by repeated experiments that almost any stomach could be easily distended up to from two and a half to three times its original capacity. In one case a stomach of five and a half ounces capacity was distended until it held twenty ounces. Dilatation takes place almost as easily during life. An instance has come under my observation in which a delicate infant of four months, weighing only ten pounds, was receiving, by the physician's orders, twelve ounces at each feeding, and eight feedings in twenty-four hours. The child was losing in weight at that.

It will be seen from the chart that among the ninety-five cases there were four in which a degree of dilatation existed sufficient to be regarded as pathological. How frequently this

is present in cases which we see only clinically we are not as yet able to say. It is highly probable that this is an important factor in the dyspepsia of infancy very much more commonly than we appreciate.

In conclusion, these investigations have shown that there is a fairly constant relation between the age of the infant and the capacity of the stomach. I believe that if we take this capacity as a guide to the amount of food to be allowed to an average infant in health we shall not go far wrong.

#### DISCUSSION.

DR. ROTCH.—I think a great deal of credit ought to be given Dr. Holt for his investigations. They were exceedingly difficult to carry out, I know. What he has put in the diagram certainly does not represent all the work he has gone over. It is a very difficult matter, indeed, to measure the capacity of the infant's stomach. The results which Dr. Holt arrived at correspond very closely with those which I had arrived at when I wrote my article on feeding. A very interesting point is the rapid growth of the infant's stomach. When you get up to the fourth, fifth, or sixth week it grows very rapidly. In artificial feeding it is necessary after reaching the fourth or fifth week to rapidly increase the amount of food until about the fourth month. Then it seems the stomach comes to a stand-still in its growth for about two months, and begins again at the sixth or seventh month with the capacity Dr. Holt has given. These facts have a good deal of importance in artificial feeding. The amount of food should not be increased so rapidly after the fourth month as it had been during the second, third, and fourth months.

Dr. Holt did not bring up the question of methods of measurement. Of course, simply to say what the stomach holds is not safe to depend upon, but I presume he has other methods not mentioned for determining the stomach's capacity and for correcting errors. I believe something can be gained by weighing the children before and after nursing.

DR. SEIBERT.—As early as 1881, Biedert published his first article to determine the amount of food an infant should have by weighing it. His experiments were entirely of a chemical and physiological character.

Dr. Holt's measurements are of great interest. As some of those present may know, I have weighed somewhat over two hundred infants to determine simply in a clinical way how much food, and of what composition, would be best digested



irrespective of age. The conclusions which I arrived at were somewhat different from those of Dr. Biedert. He laid down a law for all children, while I have found, as Dr. Rotch has, that after children have reached a certain weight, it is best to give the same quantity of milk a greater length of time. According to my experience, after a child weighs eleven pounds it ought to have the same quantity as when it weighs fourteen pounds. A point which I would make is, that the actual capacity of the stomach is by no means the measure of its digestive ability.

I have the stomach of an infant in my pocket. The infant weighed seven pounds and a half. According to my experience, and the small table which I have devised, it should have received three ounces of food. The stomach holds by actual measurement four ounces. Thus we readily see a vast difference between the actual measurement and the digestive ability. I am sure some stomachs are dilated. I have seen a great many children with dilated stomachs which were not able to digest more than one or two ounces, while others whose stomachs were much smaller could digest twice the quantity and do well.

I am satisfied that neither the actual measurement of the stomach after death, nor the actual weight of the child during life, nor the heat measurement estimated by the skin surface, as has recently been done in Germany, will alone serve as a proper guide in infant-feeding. I think we probably ought to consider all these things. It is well, as Dr. Holt has remarked, to have our attention called to the fact that the age is only to a certain extent a guide in infant-feeding.

DR. EARLE.—I would ask Dr. Holt what he has found to be the position of the stomach in infants. The text-books picture it as in nearly the vertical position the first weeks of life. I would ask Dr. Holt whether that is true.

DR. HOLT.—I have never yet seen a stomach in the vertical position. It is usually directed somewhat obliquely.

DR. ROTCH.—The frozen sections show the position of the stomach beautifully. It is not so much transverse as it is oblique in position. What Dr. Holt said about the greater length of the stomach on the larger curve is interesting, and offers one explanation for difficult digestion in that the food cannot pass on, so to speak, into the duodenum.

I think the age has a good deal to do with the amount of food which a baby takes. There is no doubt but that, of two babies of the same age, the one weighing ten and the other twelve pounds, the latter will, as a rule, take the greater amount of food.

DR. HOLT.—I did not mean to draw the inference that this chart should be used as an absolute guide in infant-feeding. That was not the purpose of the investigation. It was simply intended to ascertain how this corresponded with other methods of investigation to determine the amount a baby should be fed, —whether it tallied with our previous observations or contradicted them was not the point. Of course it is not an absolute guide. I undertook the work because I thought it needed to be done, and could not find that it had ever before been done in a satisfactory manner.

DR. A. JACOBI.—Experiments to determine the size of the stomach have been made long ago, as the author knows, by Fleischmann and Ahlfeldt. The first by inflating, drying, and measuring the stomach. The latter by simply weighing the children before and after taking a meal. Dr. Holt knows it is only an approximate value that can be obtained by these methods, and for one good reason,—namely, that it is impossible to say the inflated stomach is exactly the stomach which was present during life. On the other hand, if you weigh the child before feeding and after, it does not show the capacity of the stomach at all. If for no other reason than that during the ten or fifteen minutes the child is swallowing its milk absorption is constantly going on. At least the water will be absorbed. If during a meal the child takes three ounces, at no time will all the three ounces be in the stomach. I appreciate the work which has been done highly, but we must not forget that the values are only approximate. Nor do I believe we need anything more, or that we can ever get nearer the exact facts than Dr. Holt has succeeded in doing.

DR. ROTCH.—Regarding weighing the infant before and after feeding, I should hardly think it would make any difference whether the food was in the stomach or had been absorbed. The object is to find out how much the baby takes at a given age. It is not in that case a question of the size of the stomach, but what is the proper amount to give it. If, for instance, we found the increase in weight after a meal was two hundred grammes in a large number of cases at a given age, we would say two hundred grammes was the proper amount to give at that age.

DR. JACOBI.—I understood it was a question of how much the stomach held at a given age.

## RESULTS OF ASPHYXIA, OF SHORTER OR LONGER DURATION, IMMEDIATELY AFTER BIRTH (WITH PRESENTATION OF CASE).

BY A. JACOBI, M.D.,

New York.

I HAVE been encouraged to show this child to-day, because of a letter received only yesterday with reference to a similar patient I had seen some time ago. The case which I saw at that time was that of a child semi-paralyzed in the muscles of the extremities, face, and neck, with insufficient intellect. No cause could be found at that time. I had asked whether the child had been asphyxiated when born, for I have seen scores and scores of cases in which epilepsy or idiocy could be accounted for only by the presence of asphyxia, of shorter or longer duration, immediately after birth. A postscriptum to the letter which I received regarding that case last night states that the doctor who attended the mother in her confinement said, "The navel cord was around the infant's neck, and he had quite a time to get it off before it was delivered," so that I have not the slightest doubt the cause of the semi-paralysis and insufficient cerebration was a somewhat prolonged asphyxia at birth.

The case now presented is of a similar description, and it is for that reason I thought it would be of some interest to you. It is that of a girl four years and eight months old. The mother has had nine children, all healthy except this one. There were four years and a half between this one and the preceding child. There had been no miscarriage. The husband was healthy. It was reported that the baby was blue at birth,—asphyxiated. She has now blue spells, as they call it, followed by marked weakness. The first attack was when she was eight months old. They have recurred at irregular intervals. There has been no laryngismus stridulus. Such is a part of the record.

But there is something else in this case. The child has developed very slowly. The parents knew from the beginning



that the child was not like the others in the family. There was very little intellectual development; the child took very little notice of things; it did not smile, nor move the limbs at the usual time. The second year the baby did not hear at all. She grew up with incomplete use of the limbs and very little brain. You notice the child's head is not of the usual form. It is undoubtedly brachycephalic; between the root of the nose and the neck the distance is shorter than normal. The root of the nose is very much contracted; the vomer comparatively short (the usual appearance where the base of the skull is very short). This shortness, as a rule, is due to premature ossification between the sphenoid and occipital bones.

This, then, is a mild case of cretinism, meaning in most cases a peculiar form of rhachitis, complicated with premature ossification at the base of the skull. Thus this baby suffers on account of two facts, asphyxia at birth and cretinism, a complication which renders the prognosis for the whole duration of life very unfavorable. On the etiological importance of asphyxia I wish to make a few remarks.

You know that the undeveloped condition of the blood-vessels and of the cranial bones of the newly born are the usual causes of cephalohæmatoma, still many cases of this anomaly, and particularly the more dangerous ones, are avoidable. For there is no doubt in my mind of this, that the pressure of the forceps produces many. Altogether the effect of that instrument has been estimated with too great leniency. When I was young I was taught, and even at present it is claimed, that it acts by traction only, and not by pressure. The fact is that it must, by its very pressure between the head and the pelvis, diminish the contracted space; that it compresses the head is but too plainly seen by its traces left on the surface, with or without suffusion, abrasions, and local indentation. By so doing it strains, presses, tears blood-vessels, and there can be no doubt that hemorrhages follow many an application of the instrument. The frequent connection of external and internal hæmatoma endangers the brain to a great extent. Still, to engage in this subject thoroughly is prohibited by the limited time of this meeting.

Therefore I confine myself to copying the following extract referring to the question whether instrumental delivery is a cause of idiocy.

Drs. Winkler and Bollaen have written a paper in a Dutch medical journal on "The Forceps as a Cause of Idiocy." They mention a case of bilateral, almost symmetrical, damage to the cortex of the brain found in an idiot. The boy had been born with the aid of forceps. Only part of the vertex could be examined. There were no marks of the forceps, yet there were strong reasons for belief that the injury was caused by them. In another case there was still more ground for the opinion that injury had been caused by forceps. In this child, who was an idiot from birth, there were marks of the forceps on both sides of the skull corresponding almost exactly to the damage done to the brain. This coincidence was too remarkable to be accidental. Drs. Winkler and Bollaen performed necropsies on ten idiots, and examined twenty-five living idiots, of whom six had bilateral depressions in the skull. Another case was that of a woman born with the aid of forceps, an inmate of the Utrecht Asylum for four years. She was very short, being only one and twenty-seven-hundredths metres high, and small in proportion. She could make all movements, isolated movements being difficult. There were but two words which she could say, and she never gave any sign of understanding what was said to her. She died at the age of sixty, and at the necropsy the brain was found to be very small, weighing only seven hundred and forty two grammes (25 ounces). All the organs at the base of the brain, the optic nerves, olfactory nerves, etc., were found to be very small. Deep depressions were found on either side of the sagittal suture, the right being the more indented. The depth of the depression was two millimetres, and its greatest breadth twelve millimetres. The brain was much atrophied. The authors believe that depressions of the skull caused by instrumental delivery, even when no fracture occurs, tends to damage the cortical substance of the brain, and that this leads to general atrophy of the hemispheres, thus producing idiocy. They are disposed to think that the use of the forceps is much more frequently the origin of idiocy than is generally supposed.

It is, however, but just to say that, when we remember that it is indeed pressure which gives rise to hemorrhage (and thereby serious cerebral consequences), and, further, that there are more fatal cases from prolonged labor than from forceps, and that a great many fetuses, beginning to die *in utero*, are kept alive by the speedy use of the forceps, this instrument may still be less guilty.

The real cause of the cerebral disturbance is traumatic injury of cerebral tissue, or hemorrhage, or, at all events, circulation rendered abnormal for a shorter or longer time.

This takes place in asphyxia, or suspended or interrupted animation. It destroys a great many new-born infants that would live but for it; it results in meningeal and encephalic hemorrhages, which either prove fatal in the earliest period or give rise to permanent paralysis. It works still worse results, for death is nothing compared with what asphyxia often results in,—viz., idiocy or feeble-mindedness.

Among the idiotic or feeble-minded children there are those who are evidently predestined to that intolerably grave and unfortunate condition. Some cases depend on premature ossification of the sutures and fontanel; when this has been completed at birth, or soon after, there is no possible hope. Others result from defects of the brain, following either an arrest of development or an embryonic or foetal meningitis or encephalitis. A certain number of them are recognized by positive cerebral symptoms, such as partial or total paralysis, an unusual degree of strabismus or nystagmus. Others again exhibit anatomical changes about the head closely connected with the aberrations in the structure of the brain; for instance, the horizontal ramus has an obtuse angle, the roof of the mouth is gothic or flat, the ear is in closer proximity to the occiput, its helix or lobule absent, the eyes are oblique and too close together, the epicanthic folds flabby and deep. They cannot be prevented or treated by the obstetrician.

There are other cases of idiocy found in apparently normal children. Head and face are well formed, but they are those of idiots, nevertheless. In the course of a third of a century I have seen many hundreds of that class; my attention was early drawn to them, indeed since 1858, when I published



my observations on premature synostosis and its pathological and diagnostic importance. Not a month will elapse but I have to pass sentence on such a case either in my office or the clinic. A great many of these idiots are first-born children of a family; the majority are boys. It struck me that the prolonged parturition of the first child, and the larger circumference of the male head, must be held responsible for the injury befalling the brain. In not a few cases the delivery had been terminated by forceps; in a very large percentage the history of asphyxia, more or less protracted, was readily obtained.

I have no figures to present, but no student or medical man attends my clinic for any length of time but hears the record of such a case. In J. Langdon Down's experience (*Transactions Obstetrical Society*, London, 1876) forty per cent. of the idiots who were first-born children had a history of asphyxia.

After its existence has been stated to you, the connection of asphyxia and idiocy is so clear that I need not detail it; asphyxia results in congestion, effusion, thrombosis, extravasation, destruction of nerve-tissue, secondary inflammation, and cystic degeneration. The longer the duration of asphyxia the greater the danger. Some of you, who have worked over the inanimate body of a newly-born baby ten minutes or an hour, and finally had the nameless joy of resuscitating the infant, have been rewarded by enriching the stricken family with a hopeless idiot or epileptic. Asphyxia of long duration is always dangerous; a brief one may be so, but it promises better results. Thus no asphyxia must be left unattended for a second. A few moments gained may save life, or what is of more importance, intellectual health. Thus the immediate treatment of asphyxia is the highest duty of the obstetrician.

(To be continued.)

## Clinical Memoranda.

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### NEW YORK ACADEMY OF MEDICINE.

#### SECTION ON PEDIATRICS.

*Stated Meeting, October 9, 1890.*

L. EMMETT HOLT, M.D., *Chairman*; WALTER LESTER CARR, M.D., *Secretary*.

#### STRICTURE OF THE RECTUM.

Dr. H. D. Chapin presented a child, thirteen months old, which had been brought to the hospital a week before. It was found by the doctor who delivered the mother to have an imperforate anus, which he opened within a few hours after birth. Since then, however, the baby had been suffering a great deal from constipation, and when brought to the hospital was in a precarious condition, not having had a passage for six days. It was found to have a tight stricture above the anus, composed of a hard fibrous band about an inch in breadth. The temperature had ranged since admission from 99° to 104° F. An enema was given of oxgall and glycerin, and a fair movement ensued in a few minutes. This was repeated each day until the last day or two, when a glycerin suppository was given alone. After the bowel had been partially emptied, examination showed a collection of very hard fæces above the stricture. The last few days a peculiar diarrheal condition had been started, due, doubtless, to the hard fecal accumulation. This afternoon he had passed up a catheter and succeeded, he believed, in breaking up the hard mass.

The question arose, what to do for the stricture? It had occurred to him at first to get through it and dilate, but he had been told by better authority, he said, that this treatment probably would not be very successful. He now favored divulsion, as was sometimes practised on urethral strictures.

Dr. C. B. Kelsey said the patient would have to be operated upon, else it would not live long, for immediately within the

anus was an exceedingly firm membranous septum, completely separating the anus from the cavity of the rectum, except that in its middle was a small perforation sufficient to admit the tip of the finger. It would be exceedingly easy to split the septum and give temporary relief; but relief brought about in this way, he said, was never permanent; constriction recurred, and some months, or perhaps a few years, ended a miserable existence. A more radical procedure had sometimes been practised, namely, complete exsection of the cicatricial tissue, exactly as one would exsect a cancer of the rectum. Various methods had been suggested, but he thought the best one was to excise the cicatricial tissue and bring down healthy rectum and join it with healthy skin below. If some one of these operations did not succeed, then left inguinal colotomy would have to be performed, and he wished to state that patients were able to lead a comfortable life after this operation. While a sphincter did not form, yet the bowel acquired the habit of emptying itself once a day, and gave the patient time to seek the closet.

#### CONGENITAL HYDROCEPHALUS WITHOUT ENLARGEMENT OF THE HEAD.

The chairman, Dr. Holt, presented a specimen of congenital hydrocephalus from an infant, which died, aged three weeks. There was no enlargement of the head, although the degree of hydrocephalus was extreme. The infant had spina bifida, which went to suppuration and caused death. The fluid in the spinal tract was purulent, as was also that in the ventricles of the brain. The fluid from the ventricles weighed six ounces. The ventricles were much dilated, so that the hemispheres in many places were only a fourth of an inch thick, in some only a line thick. This was the second case in which he had made an autopsy within the past month and found hydrocephalus, while the head was not larger than normal.

#### A STUDY OF ONE HUNDRED CASES OF PNEUMONIA IN CHILDREN.

Dr. W. L. Stowell read a paper with this title. The one hundred cases were selected from a total of one hundred and forty-six cases, the remainder of the one hundred and forty-six being excluded because over ten years of age. The study was clinical, and not based on post-mortem examination. The following were some of the points brought out: In some cases there was apparently beginning pneumonia, yet, after a dose of antifebrin and free sweating, they did not continue to



run the course of pneumonia. Twenty-five per cent. or more of the cases were of croupous pneumonia, and it was noted that fourteen were on the left side, and thirteen on the right. Of the cases of broncho-pneumonia, in fifty-six bronchitis was not specially noted. Speaking of symptoms, he said there was a rapid respiration, but not necessarily dyspnœa, for this was caused by non-aeration of the blood. When the heart failed, however, the lips became blue, and there were evidences of cyanosis. The relation of inspiration to expiration was reversed, that of the pulse to the breathing was changed. Instead of being four to one it became two to one. But the character of the pulse was far more important than its frequency; if intermittent, the outlook was grave. Profuse or early sweating was a forecast of evil; it indicated prostration. Taking place at the crisis, however, with sleep, it pointed to recovery. Most observers had stated that the flush of the face was oftenest on the side opposite the affected lung, but he was not able to place much reliance on that statement. Herpes was uncommon; it was specially noted in but one case. Infants often vomited, the vomited matter being like prune-juice. When early and profuse or persistent, he thought it pointed to a very bad prognosis.

Cerebral symptoms appeared to be most common when the apices were affected, and might even overshadow the symptoms referable to the lungs. Regarding the temperature, it was as a rule higher in croupous than in catarrhal pneumonia, and usually ended in the former, it had been said, by crisis. But sometimes the temperature in croupous pneumonia was very low, and in catarrhal pneumonia it was sometimes very high. As a matter of fact, nearly all his cases, croupous as well as catarrhal, terminated by lysis.

Most croupous cases terminated in health; many catarrhal cases (not referring specially to his own list) terminated in death or another disease. Of all his hundred cases, sixteen died.

He gave the percentage of mortality by different writers under different modes of treatment, and said that the treatment now most popular was the expectorant and the antipyretic. The reader said he had tried by common sense treatment to make the little sufferer comfortable and aid the speedy termination of the disease. If there was marked headache and delirium, he gave one or two doses of antifebrin with marked benefit. If the temperature was not more than 103° F., nor the symptoms generally unduly prominent, it would be sufficient to give small doses of aconite or alkalies. In the croupous form pain was usually present, and might be

relieved by hot poultices on the back. If the attendants were careless, this had better be omitted. If the inflammation were chiefly anterior, a cold compress would be found very agreeable. The labor of lifting a poultice on the anterior chest sixty times a minute was not, according to his experience, a good thing. Flannel should be worn throughout. At the time of crisis digitalis might be called for, and the patient should receive an abundance of concentrated food. In adults alcohol might be indicated, but he thought children would take meat extracts and assimilate them better without alcoholic drinks than with. Digestion was interfered with by alcohol. Digitalis or muriate of ammonia would physiologically wake up the flagging heart, and nourishment could be obtained from peptonized milk or meat extract.

He had once supposed all cases of pneumonia with pertussis were fatal, but he had met with several in which recovery had taken place. At least one of these was saved by a good dose of morphine, which gave a full night's rest. The child seemed to have been worn out for want of sleep.

The author's conclusions were that statistics of this nature were of very little value unless one personally knew just why they were compiled; that common sense or palliative treatment was best; that many apparently mild cases became severe under whatever form of treatment, while many severe cases terminated favorably with little care. He came at last to the conclusion, as had Ziemssen, that the only duty of the physician was to maintain life until the disease became cured. Of primary lobar pneumonia, three of the patients died, two of them being cases of double pneumonia. Death in one of these resulted from diarrhoea on the twentieth day of sickness. Recurrences seemed not very infrequent. One of his patients had three attacks.

The chairman, in calling upon members, said that, in accordance with the programme, the discussion should be directed to three points, and he would add a fourth: 1. Is the pneumonia of children croupous or bronchial? 2. Does alcohol help or hinder recovery? 3. What are the indications for antipyretics? 4. Is pneumonia ever aborted?

Referring to the fourth question, the chairman said he supposed all had seen cases, as he had, which started off with the symptoms of pneumonia, which disappeared after thirty-six hours to two days, and if they were not cases of pneumonia which spontaneously recovered or were aborted, it would be interesting to know what they were.

Dr. Francis Delafield thought the first question could hardly be answered without some definite conception of what consti-

tuted broncho-pneumonia on the one hand and croupous pneumonia on the other. For himself, the difference between these two forms of pneumonia was exceedingly well marked. It was not that there was bronchitis in the one and not in the other, for he knew of no pneumonia in which bronchitis was not present. The difference did not lie in the fact that there was consolidation of portions of the lung in the one, and of the entire lobe in the other. Consolidation of the whole of one or more lobes was common enough in what he believed to be true broncho-pneumonia, and consolidation of a portion of a lung, though rare, was possible in what he believed to be croupous pneumonia. The real difference between the two conditions, it seemed to him, lay in the character of the inflammatory products. A croupous pneumonia was one in which there was a pure exudative inflammation, one in which the blood-vessels were affected, the tissues undergoing no change; the cavities became filled with fibrin and pus. The inflammation lasted only a moderate number of days, and if not sufficiently severe to destroy life, the products of the inflammation became absorbed within a moderate length of time, and the inflamed tissues returned to their natural condition.

A broncho-pneumonia was an example of a different form of inflammation altogether. It was an inflammation with new connective-tissue formation in the walls of the bronchi and in the air-vesicles surrounding the inflamed bronchi. This meant an inflammation which would last a long time; one in which it was much more difficult for the inflamed tissue to return to its natural condition; one in which there was much more likely to be a prolongation of the inflammation into a subacute or chronic condition.

Looking at it in that way, so far as his experience went, he would have no hesitation in saying that true broncho-pneumonia was the common inflammation of the lungs in children, but that croupous pneumonia did occur in not an inconsiderable number of cases. In adults croupous pneumonia was the rule, broncho-pneumonia was the exception. Between childhood and adult life the two varieties were more evenly divided.

Regarding the second question, he doubted whether he was a very good judge, for he must confess to having a strong objection to giving alcohol to children under five years of age under any circumstances whatsoever. But in adults he was by no means averse to giving alcohol, if necessary, in very large quantity. He had never seen a child taking alcohol during pneumonia whom he thought was not being made worse by it rather than better.



As to the indications for antipyretics in pneumonia, the question could better be answered if it were subdivided: 1. Is there an indication for giving antipyretics in pneumonia to secure greater comfort to the child? 2. Or is there any indication for them to make the child less likely to die? The first of these questions he answered in the affirmative, that antipyretics did often make the child more comfortable; the second question was answered in the negative.

As to the fourth question, whether pneumonia could be aborted, he looked upon the cases of so-called aborted pneumonia as examples of exudative inflammation running an unusually short course. It was not due to the treatment, but was simply the natural destiny of the inflammation in the given case to run a shorter course than usual.

Dr. Joseph E. Winters, accepting the definition of croupous and broncho-pneumonia of Dr. Delafield, said he thought croupous or lobar pneumonia was comparatively frequent in children under two years, while broncho-pneumonia at this age in private practice, where the parents sent for the physician in cases of pertussis, bronchitis, etc., was comparatively infrequent. In tenement-house practice the majority of cases were catarrhal. In fact, it seemed that many of these cases which started out as lobar pneumonia became complicated by the catarrhal, for, as Dr. Delafield had said, in both forms of pneumonia there was some bronchitis.

As to the use of alcohol, he endorsed what Dr. Delafield had said. He could not recall a case of pneumonia in children in which he had used it for some years.

Antipyretics, he thought, were now used more to relieve distressing symptoms than to reduce temperature. It was not often that the temperature of lobar pneumonia should be interfered with. If one attempted to reduce it in broncho-pneumonia with antipyretics he was very likely to do more harm than good.

As to repeated attacks, they might occur, but not as often as mothers were apt to tell the physician, nor as often as the text-books might lead one to suppose. As to aborted pneumonia, he used to see a good many cases in which it seemed there was commencing pneumonia, having some of the physical signs, relation of pulse to respiration changed, elevation of temperature, etc., yet the next day find these signs had disappeared. It had been a question with him whether these were cases of pneumonia of short course. He thought there might be an inflammatory process with some exudation which would terminate in complete resolution in forty to seventy-two hours, but very rarely.

Opiates, he said, were seldom indicated.

Dr. Billington referred to a list of seventy-eight cases of pneumonia which he had formulated some years ago, but having lost the list, and speaking from memory, he said the mortality was extremely small, while the treatment was very simple. He was glad to hear Dr. Delafield's views on alcohol, for he had long since called attention to the evil of using alcohol so commonly in children, not only for pneumonia, but for other diseases as well. He did not place much reliance on the newer antipyretics. He had obtained decided benefit from aconite in cases which started off violently, with pretty high temperature, threatened convulsions, etc.

Dr. Henry Koplik had found lobar pneumonia under the fifth year to be extremely rare. One should be careful in making a diagnosis of croupous pneumonia in children, based on clinical symptoms, for as Dr. Delafield had said, a large part of a lung might be involved in broncho-pneumonia. Effusion at the bottom of the chest might also mislead one to diagnose croupous pneumonia where broncho-pneumonia existed. Even at the autopsy it required an expert to differentiate between lobar and broncho-pneumonia. As to the etiology, it was a question whether it was not identical in the two forms.

Dr. J. Lewis Smith thought that in practice it was convenient to divide pneumonia into three classes of cases, namely, broncho-pneumonia, croupous pneumonia, and hydrostatic pneumonia. The latter was seen in institutions, in children dying of wasting diseases. Microscopically it probably resembled catarrhal pneumonia. But bronchial pneumonia was of most interest to the young practitioner at this season, for it was the most common form in the winter and spring, was insidious in origin, starting in a bronchitis which crept down from the coarser to the finer bronchi, and ended in a pneumonic inflammation. He thought this form of pneumonia could be aborted. And Professor Flint, he said, thought that large doses of quinine would abort croupous pneumonia. Having witnessed many post-mortem examinations, he had come to the belief that croupous pneumonia scarcely ever occurred under the third year.

As to alcohol, when he had found the action of the heart somewhat feeble, rapid, the respiration much accelerated in the broncho-pneumonia of children, he had given two drops of brandy for each month of age of the patient, repeating it every two or three hours. As to a poultice being too heavy, he always gave directions that it be made as thin as a paste-board, and he added one-sixteenth part mustard, the remainder

flaxseed, and covered with oiled silk. It quieted the child, allayed pain and cough. He thought little result was obtained from muriate of ammonia. He gave carbonate of ammonia, which promoted cough while acting as a stimulant. He gave it in milk to avoid irritating the stomach.

A frequent change of position was desirable. He certainly gave opium much less frequently than formerly, especially in children under twelve months.

In closing the discussion, Dr. Stowell said that seventeen of his cases were under one year; twenty of croupous pneumonia under three years, the diagnosis being clinical. He supposed some cases in which pneumonia was diagnosticated in very young children were cases of atelectasis. He had shown this at autopsy in one instance. He had given up carbonate of ammonia because it was irritating to the stomach, but would try it again and give it as Dr. Smith had suggested, in milk.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Crothers, T. D.: *Alcoholic Heredity in Diseases of Children.* (*American Lancet*, Detroit, 1890, xiv. 201.)

The diseases of children of alcoholic parentage are far more complex, and require greater care. In addition to whatever disease they may suffer from, there is always neuræsthenia and defective control of the brain centres, which may come into prominence at any moment, from causes both known and unknown. This hereditary bias and neurotic instability enters into all cases.

The general principles which should govern in the treatment may be grouped as follows:

1. No form of alcohols are safe, and narcotics of all kinds should be used with great care.

2. The diet should not include meats of any kind, because of their stimulating character. While meats contain much food force, they act as stimulants to a brain already overstimulated and exhausted, and increase the peril of nervous disease. The pathological tendency of all these cases is to become alcohol takers and meat eaters, hence the diet should always be non-stimulating and farinaceous, and should be carried out with military regularity.



3. The hygienic treatment is also of the greatest importance; every means and measure which can build up the system, and avoid brain and nerve stimulation, is required.

4. Cases of this character should be guarded against every possible extreme, both in the surroundings and physical conditions, that are under the control of the physician. The tendency of all energy and nerve force is to pass off in explosions, which should be counteracted; the diseases they suffer from show this tendency to concentrate and become intensified in certain directions, also to manifest distinct exacerbations. Finally, the fact of an alcoholic heredity in diseases of children that we are called upon to treat, gives a wider therapeutic range of possibilities, both in direct and preventive medicine.

Recent studies of alcoholic cases show that over seventy per cent. are directly inherited. If this is confirmed by later studies, the treatment of inebriety will in the future begin in infancy, and the higher science and art of medicine will win its greatest triumphs along the line of prevention.

Fowler, G. B.: *A Method of Artificial Infant-Feeding*. (*N. Y. Med. Rec.*, 1890, xxxviii. 42.)

Put four tablespoonfuls of rice into three pints of water, and boil half an hour; then set aside on back of range to simmer during the day, water being occasionally added by the cook to maintain the original three pints. At night strain through a colander and place on ice. When cold a paste is formed. Three tablespoonfuls of this paste are added to each nursing-bottle (half-pint) of milk, and fed during the next day, a fresh supply of rice paste being under way in the mean time. Should there be constipation, use farina prepared in the same way and used in the same proportion. Rice is astringent, farina laxative.

Currier, C. G.: *Milk Sterilization*. (*N. Y. Med. Journ.*, 1890, ii. 687.)

Ordinary milk, like other foods, is in general safest when cooked. While for common city milk an hour's steaming is often insufficient for complete sterilization, yet by keeping the milk for twenty minutes at the temperature of boiling water, we destroy almost all of the micro-organisms that may be present and eliminate the element of danger from any of the recognized disease-producing germs (including the *bacillus tuberculosis*) that may be present. We should therefore direct that a doubtful milk be boiled for at least thirty minutes, as careless people may lose time in raising the milk to the desired

temperature. For common city milk it is well to set an hour as the time for which it should be steamed, and after this cooking the milk should be kept cool until used; if then any spores remain alive, their increase is at most very slow.

If used without having been cooked, milk should have come from a producer who employs a constant and competent inspection to detect the development of disease in any of the carefully-kept cows, and where no diseased or unclean milk is allowed to enter into the supply sold. The most careful and incessant cleanliness should be practised to exclude all hay-dust and other dirt, whether coming from the hide of the cow, from the hands of the milker, from an imperfectly-cleansed vessel, from the air, or by the contamination of impure water.

The cans and other receptacles used should be well cleaned with hot water and steamed for some time. When the milk has been put into these, they should be well covered and at once cooled, and constantly kept at a low temperature. The bottles out of which milk is fed to babes should also be kept rigorously clean, and after the nipple arrangement is cleaned it can lie in a saturated solution of boric acid.

Miller, L. H.: *Twenty-four Cases of Scarlet Fever from drinking Milk.* (*N. Y. Med. Rec.*, 1870, xxxvii. 587.)

Late in January last a daughter of one of our dairymen went to the city for a visit. The next day she was taken ill with scarlet fever, and returned home two weeks after her recovery. Two weeks later, March 11, her younger sister had scarlet fever, and on April 4 a number of cases of the fever started in different parts of the village; and by the 6th of April, twelve cases were reported.

A thorough investigation showed that every one who had the fever had drunk the milk, and not one who did not drink it was affected; that at the quarantine his orders had been scrupulously obeyed; but that the milkman, however, had washed and wiped his cans with white flannel cloths taken from rags left in the barn by a rag-pedler.

After delivering milk on the morning of the 7th, this man was not allowed to sell any more; and after the 8th, no new cases of scarlet fever occurred till the 18th and 19th, when two cases started in the same families where it had been introduced by the milk; and no other cases have occurred up to the time of writing (April 25). From April 4 to 8, twenty-four cases developed directly from drinking the milk. The stage of incubation in every one of these cases seemed to have been less than twenty-four hours, and the first symptoms in most of the cases were very severe; intense pain in stomach

and bowels, excessive vomiting, and a profuse diarrhoea. After these symptoms nearly every case had run a mild course, and there has not been a single death.

Powell, W. M.: *Rhus Aromatica* in Enuresis. (*Annals of Gyn. and Ped.*, 1890, iii. 422.)

The author reports sixteen cases, and says that in all cases he excludes phimosis or an adherent prepuce as the cause. It is well to commence with minute doses, gradually increasing a drop or two each day so as to prevent any gastric disturbance. The following is a very palatable formula for young children:

R Extr. rhois aromat. fl., fʒ iij;  
Elix. aromat., fʒjss;  
Aq. cinnamom., q.s. ad fʒiij. M.

Sig.—Half-teaspoonful, to be increased to one teaspoonful, four times a day after eating.

Much stress should be laid upon diet and general regimen. The quantity of drink should be restricted. Very little meat should be allowed, owing to the effect it has of acidifying the urine. The child should have plenty of fresh air and exercise; and should be given every morning a cool, or even cold, sponge-bath, with a tablespoonful of sea salt added. The body should then be briskly rubbed with a moderately coarse bath-towel, especially in the region of the spine.

Stedman: Vomiting of Obscure Origin in Young Children. (*Boston Med. and Surg. Journ.*, 1890, cxxii. 516.)

He gives the details of three cases. The best treatment for this class of patients is absolute rest, as far as it can be maintained; a quiet, sunny room, with pure air; no one to see the patient except those whose duty it is to care for and treat the case; the starvation plan as to food by stomach; an occasional nutritive enema of peptonized milk or beef-juice, casein of milk not being digested in the rectum.

Sometimes these cases relapse, and it is of much importance to go cautiously and systematically in the diet when the child commences to take food by the mouth. Not only the quantity but the quality must be considered; and it is well for a few days to use peptonized milk almost exclusively, with perhaps beef-juice squeezed from fresh beef, a few teaspoonfuls twice a day, where the child has had it before its sickness and likes the taste, and is willing to take it without forcing it down. The nervous system must also be carefully watched, and all excitement forbidden until the patient is well and strong or in its normal condition once more.



In the discussion, Dr. Rotch said that the treatment should be absolute quiet in a darkened room; absolutely no food in the stomach for several days. Small doses of chloral and bromide of potassium, by the rectum, dissolved in brandy and water, to procure sleep and stimulate the nervous centres. After forty-eight hours, small enemata of peptonized milk, and finally, cautiously experimenting with mild broths and milk and lime-water in the stomach.

Solis-Cohen, S.: *Eucalyptus in Catarrh of the Respiratory Tract and Obstinate Cough in Children*. (*Phila. Med. News*, 1890, lvi. 561.)

In acute cases my usual custom is to administer it in connection with ammonium salts; in subacute cases a little paregoric may be advantageously added. In the obstinate irritative coughs following inflammatory affections which have apparently subsided, the fluid extract of eucalyptus is best given without other drug, in syrups of tolu and acacia or in an emulsion of oil. The dose is about five drops for a child of two years. The following are specimen formulæ:

R Ammonium carbonate, gr. viii-xvi;  
Ammonium chloride, gr. xxii-xlvi;  
Fluid extract of eucalyptus, fʒiss;  
Syrup of acacia,  
Syrup of tolu, āā fʒss;  
Water, ad fʒii.

Sig.—For a child two years of age with acute bronchial or laryngo-tracheal catarrh, one fluidrachm in milk or water every two, three, or four hours.

R Aromatic spt. of ammonia,  
Camph. tinct. of opium, āā fʒii;  
Fluid extract of eucalyptus, fʒiss;  
Syrup of acacia,  
Syrup of wild cherry, āā fʒss;  
Water, ad fʒii. M.

Sig.—For a child with subacute bronchial catarrh, one fluidrachm in water every two, three, or four hours.

Schwinz: *The Use of Creoline in Certain Diseases of the New-Born and in Nursing Infants*. (*Archiv. Ital. di Ped.*, 1890.)

The author has used creoline for the following diseases:

*Purulent ophthalmia in the new-born*.—In ten cases irrigation was practised with a one-per-cent. solution of creoline. In two of these, in which the blennorrhœa was not very intense, there was a complete cure at the end of six days. In the other eight cases the use of the irrigating fluid was continued four to five weeks, but the success was not satisfactory, and recourse was then had to the use of boric acid and nitrate of

silver. A solution of the strength of one or two per cent. of the latter was used by instillation, and it caused less pain than the irrigation with creoline.

*Muguet and Bednai's aphthæ.*—In eleven cases of these diseases which were treated for a long time with solutions of chlorate of potash, hypermanganate of potash, and boric acid without appreciable result, irrigation of the mouth and pharynx for five or seven days with a one-per-cent. solution of creoline was followed by definite and complete cure.

*Omphalitis in new-born infants.*—In cases of umbilical periphlebitis the use of pure creoline as an unguent was followed in four days by the complete disappearance of every trace of inflammatory reaction.

*Erysipelas in the new-born.*—The use of pure creoline by friction upon erysipelatous patches will give gratifying results.

*Acute gastro-enteritis.*—In five cases of acute gastro-enteritis creoline was used after the following formula: Creoline, two to three drops; aqua canellæ, eighty grammes; syrup of mallows, twenty grammes. To small children a small teaspoonful may be given every hour.

For larger children one may combine creoline one gramme with white sugar five grammes. This may be divided into five or ten powders, and one or two may be given daily.

This treatment gave the most satisfactory results, the symptoms disappearing in three to six days.

*Surgical disease of little children.*—A one-half- to one-per-cent. solution of creoline will produce complete asepsis of the surface and cavities of the body, without fear of any phenomena of poisoning such as may follow the use of carbolic acid or sublimate.

A. F. C.

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## II.—MEDICINE.

Ashby: Some Points in the Pathology of the Paralysis which occur during the First Two Years of Life. (*British Medical Journal*, February 8, 1890.)

The principal forms of paralysis in infants may be classed under six heads.

1. *Intrauterine lesions* (meningo-encephalitis).—The results of such inflammations are seen in the brains of idiotic children, which show atrophy, sclerosis, or chronic hydrocephalus.

2. *Meningeal hemorrhage.*—The invariably immediate cause of this accident is asphyxia, the delicate vessels being readily

ruptured when distended with venous blood. The most common cause of asphyxia and hemorrhage is prolonged and difficult labor. It may also occur during paroxysms of pertussis, violent attacks of vomiting, or during convulsions. It is usually bilateral and found involving the parietal region, and running along the Sylvian fissures. The clot separates the pia mater from the surface of the convolutions, tearing the vessels which pass to the gray substance. The result is interference with the nutrition of the nerve-centres and more or less degeneration. In most cases there is no paresis or other evidence of a surface lesion. This is no doubt due to the undeveloped state of the cortical centres at birth.

3. *Syphilitic arteriitis and softening*.—Disease of the brain in connection with hereditary syphilis is not common. When it does occur it usually takes the form of an arteriitis.

4. *Acute cerebral paralysis* (encephalitis, embolism, etc).—This usually takes the form of hemiplegia, and may be due to tubercular meningitis, meningeal hemorrhage, or embolism of the middle cerebral artery. As a rule, the paralysis appears suddenly as an acute febrile disease, and convulsions being present at the onset. The cause of the primary illness is uncertain, and the relation of the convulsions to the paralysis in most instances cannot be determined.

5. *Acute spinal paralysis* (atrophic paralysis, anterior poliomyelitis).—Here the lesions are found chiefly in the anterior horns of the spinal cord, and are inflammatory in character.

6. *Peripheral paralysis*.—These do not play an important part in the paralysis of early life. The group includes diphtheritic paralysis and the various paralyses resulting from injury to nerves.

Money, Angel: An Unusual Case of Tubercular Meningitis. (*Provincial Medical Journal*, January 1, 1890.)

The patient, a girl, aged nine months, was brought to the hospital on December 7. She had had measles five weeks before, but had made a perfect recovery, and had seemed well till November 27, when she had a convulsion. The left arm and leg were found, soon after this, to be completely paralyzed. On examination complete left hemiplegia was found; the face was not affected; there was no squint. The knee-jerk was readily obtained on both sides, and there was no ankle-clonus. Intelligence, so far as could be judged, was unaffected. The child was well nourished and unusually fat. Family history—except remote phthisis on the father's side—was good.

The child seemed to be improving until December 27, when a series of convulsions occurred, followed by unconsciousness.



Four days later she was unconscious; the pupils were moderately contracted, but reacted slightly to light. The breathing was quiet and regular, with occasional deep sighing; the pulse was regular,—96. There was no fever, no cyanosis, but the surface soon became cold. Ankle-clonus was present, but more marked on the left side. Knee-jerk was equal on both sides. On the following day convulsions again began, and were bilateral in character; the lips were blue; the skin hot and dry. Rectal temperature was 107° F. There was no rigidity of the neck or other part of the body. Death ensued in the evening.

At the autopsy the brain was found to be soft and pale, with excess of pale, clear fluid in the lateral and fourth ventricles. There was much yellow thickening of the meninges and base of the brain, and spreading around the cerebral peduncles to the apex of the upper triangular surface of the cerebellum, where there was abundant abnormal material. Thickening could be felt around a large bunch of the right middle cerebral artery, which pierced the corpus striatum, and on section, much spotty and striated intense hyperæmia was seen in the neighborhood of the large arterial branch, which was blocked with a dark-colored thrombus. There were recent, disseminated tubercles in both lungs, a few miliary tubercles on the surface of the visceral pericardium, and some on and within the spleen, liver, and kidneys.

The difficulty in diagnosis in this case was great. The only symptoms were hemiplegia of sudden onset with tendency to recovery; convulsions and unconsciousness; and pyrexia on the last day. It is clear that the hemiplegia was due to the thrombosis of the large branch of the right middle cerebral artery. As this was not due to embolism, it must be explained by plugging due to the presence of inflammatory products and tubercle in its immediate neighborhood. This would seem to prove that the tubercular disease was in full activity, at least thirty-six days before death. It gives no clue, however, as to how long the meningeal affection had existed. If the hemiplegia had not been produced, no symptoms of tubercular meningitis would have been present until five days before death.

Sympton, E. M.: Two Cases of Infantile Cerebral Palsy. (*British Medical Journal*, February 8, 1890.)

The first patient was a boy, aged nineteen years. At his birth the labor was long and difficult, but no instruments were used. There has always been partial paralysis on the right side. During the past three years there have been five con-

vulsions. The head is much larger on the right side; the right arm and leg are smaller and shorter than the left, but the muscles react well to faradism. The reflexes are also present. It would seem to be clearly a case of congenital cerebral spastic palsy, the birth-palsy of Gowers, with epileptoid convulsions, coming on rather late in puberty. The lesion is probably a localized atrophy, at the cortex, due to meningeal hemorrhage, which occurred during parturition.

The second patient was a girl, aged thirteen years. At three and a half years of age, in close connection with an attack of measles, she was seized with aphasia and right hemiplegia. She is an intelligent child; speech not quite perfect; head well shaped; right arm and leg smaller and weaker than left. The association with measles is interesting, as it also occurred in seven of Gowers's cases, four of Abercrombie's, and four of Osler's. As in three cases of Osler's, there was no spastic condition of the muscles.

Oliver, Thomas: Hemiplegia accompanied by Aphasia in Children. (*British Medical Journal*, February 8, 1890.)

Two cases are reported. The first is that of a girl, aged two and a half years. During perfect health she was suddenly seized with complete paralysis of the right side of the body, with aphasia. In a few days tremor appeared in the paralyzed parts, which soon developed into strong convulsive movements, affecting both sides of the face and body. This soon gave way to extreme rigidity, with spasm, with occasional periods of relaxation, especially of the fingers and ankle of the right side. Knee-jerk was absent on both sides; plantar reflex exaggerated; pupils equal; temperature normal throughout. Death occurred on the twenty-fifth day.

At the post-mortem examination, strong adhesions were found to exist between the calvarium and the dura mater, which was greatly thickened. The walls of the longitudinal sinus were thickened, and a firm dark clot occupied its interior. A clear gelatinous fluid occupied the subarachnoid space, particularly in the upper part of the motor area on the right side, and over the whole motor area on the left side, where it was most marked over the third anterior inferior frontal convolution. The convolutions were softened. The vessels at the base were healthy. The white substance of the right half of the cerebrum was firm and healthy; that on the left was softer and showed many more and much larger puncta hæmorrhagica. Four drachms of bloody serum occupied the left lateral ventricle. The left internal capsule was much softer than the right. The pathological condition was, thus, a vertical men-

ingitis, followed by effusion pressing upon the left motor areas and Broca's lobe.

The second case was one of left-sided convulsions, followed by hemiplegia and aphasia, in a child of five years. On the third day she spoke the word "cake," and for a week repeated it incessantly. At the end of a month speech was almost perfect, and in two months the paralysis had disappeared; the speech was perfect and memory good.

**Mantle: The Causes of Laryngismus in Young Children.** (*British Medical Journal*, February 8, 1890.)

This paper deals, not with the form of laryngeal spasm, in which stridor is a marked feature, but another form characterized by a distinct catch in the breath, bringing respiration temporarily to a stand-still. It is most common during the first half-year of life. The attacks are frequently seen when the child first wakes from sleep. The breath is sometimes recovered with a crowing inspiration, but frequently a mere disturbance of the natural rhythm of respiration is all that is noticed. At first the spasm is confined to the laryngeal muscles; but if the condition continue, other muscles will sooner or later become involved. The condition known as tetany soon appears, to be followed in some instances by general eclampsia. In Dr. Cheadle's words, in speaking of convulsions produced by laryngeal obstruction, "Laryngismus, tetany, and general convulsions are the positive, comparative, and superlative of the convulsive state in children."

Among the causes of this disorder rickets is the most common, but not the only cause. Another cause described by Goodhart is excessive recurring of the epiglottis in its vertical axis, bringing the ary-epiglottic folds almost into apposition, with a mere chink left between them. In cases of this kind the symptoms gradually pass off as the child grows older, but are not relieved by treatment. Enlargement of the bronchial glands is another cause, but accounts for but very few cases; enlargement of the thymus glands accounts for a still smaller number. There is still another cause, which has not before been recognized, except indirectly by Ringer. This is elongation of the uvula and thickening and congestion of the palatal folds. The details of an extremely interesting case are given. A child, eight weeks old, suffered successively from laryngismus, carpo-pedal contractions, and general convulsions. After other treatment, which had proved unsuccessful, removal of the elongated and congested uvula resulted at once in complete and permanent cure.



Browne, Lennox: Elongation of the Uvula as a Cause of Laryngismus. (*British Medical Journal*, February 15, 1890.)

When the faucial tonsils are not enlarged, elongation of the uvula in young children is due to paresis of the soft palate. This, in turn, is almost invariably due to enlargement of the pharyngeal tonsil, otherwise known as adenoid growths. In almost every case of laryngismus, as well as in those of tetany and convulsions, the patient is a mouth-breather, and, if sought for, adenoid growths will be found. The author has rarely been obliged to excise the uvula of a child, for removal of enlarged tonsils, whether faucial or pharyngeal, will, in most cases, lead to restoration of the muscular contractility of the soft palate.

Bourneville: Myxœdematous Idiocy (Pachydermic Cachexia). (*Archives de Neurologie*, March, 1890.)

This is the twenty-fifth case of this disease reported by the author. Nothing unusual was observed till the boy was three years old, when he began to grow fat and development was arrested. At twenty-five his height was only three feet; the anterior fontanelle was open; the eyelids were so swollen that the eyes were scarcely visible; the cheeks were large and fatty; the lips thick and prominent; the neck short and thick; the thyroid absent. On each side of the neck there was a lipomatous mass, and similar masses existed on the sides of the trunk and in the axillæ. The abdomen was voluminous, and there was an umbilical hernia. The hands and feet were short and fat; the skin of a waxy white color, and in places translucent. The voice was harsh, the speech slow; the vocabulary was limited, and intelligence but slightly developed.

Ballantyne: Sclerema and Œdema Neonatorum. (*British Medical Journal*, February 22, 1890.)

A case representing each of these unusual disorders is reported. Both were weak, premature children, and both died on the third day. The skin on the thighs, back, and buttocks of the first child became hard and tense on the second day. It was of a dirty yellowish color, and did not pit on pressure. On the third day the scleremic condition had become almost general, and the body became very cold. In the second case œdema began to develop a few hours after birth, and was confined to the lower part of the trunk and legs. The surface was cold, the limbs limp, the skin had a cyanotic look and pitted on pressure.

An extended historical account of the two diseases is given, and the morbid anatomy is illustrated by drawings.

Sclerema is defined as a rare disease occurring in the new-born infant, characterized by induration of the subcutaneous tissue, and being little amenable to treatment. It is mostly confined to the back shoulder and thighs. *Edema neonatorum* is a disease of the new-born, characterized by serous infiltration of the subcutaneous tissue, due in most cases to cardiac, renal, or pulmonary disease. It affects the lower half of the body.

Of the etiology but little is known. It occurs most frequently in premature children and in the winter months. The prognosis in both diseases is very grave.

Dalton, B. N.: *Rheumatic Fever: Its Etiology and Relation to other Diseases*. (*British Medical Journal*, March 1, 1890.)

The author has for some time held the opinion that rheumatism might be caused by breathing air contaminated by the emanations from sewers and drains. The statement recently made by Dr. Haig-Brown that the percentage of cases of rheumatism in a large institution had been reduced from four per cent. to one per cent. by improvement in the drainage was confirmatory of that view. Though a few observers have recognized a connection between drain-poison and rheumatism, it is not generally acknowledged. The knowledge of such connection is of great practical importance, and may furnish an explanation of the relation of rheumatism to tonsillitis and other diseases. The details of numerous cases are given, which are strongly confirmatory of this theory. The number of patients suffering from rheumatism who had been exposed to drain-emanations was very considerable.

The probable bacterial nature of rheumatism brings it into relationship with other diseases due to micro-organisms, and renders intelligible the following points of likeness: 1. Its tendency, if untreated, to run a quite definite course, lasting about six weeks in adults and two weeks or less in children. 2. A tendency to relapse, as seen in typhoid, and to a less extent in scarlatina and diphtheria. 3. The hyperpyrexia, which, occurring most frequently in rheumatism, occurs also in typhoid and septic peritonitis. 4. The affection of the same parts in rheumatism and pyæmia, and the sweats common to each. 5. The greater incidence of the disease on the young, and the comparative immunity of the old, in this resembling all the other members of the group. 6. Its greatest prevalence at certain seasons. 7. A marked hereditary tendency as with

tuberculosis. 8. Liability to repeated attacks, in this respect resembling most erysipelas.

Recognition of the bacterial nature of the disease throws light on the influence of those drugs which have been found most useful, namely, iodine, quinine, and salicylates. That the poison is a special one renders it possible that the disease should coexist with others; that it may enter the system by the inhalation of sewer-gas renders probable its coexistence with others that may be contracted in the same way. Sewer-gas is a variable mixture, containing numerous kinds of disease-producing germs, which leads to results varying according to the soil it meets with and the relative proportion of the organisms present. The author holds, therefore, that rheumatism is an addition and not a part of the disease with which it occurs. If two poisons are absorbed at once, the one having the shorter incubation develops first, hence rheumatism follows tonsillitis.

Even if these views as to the causation of the disease are not correct, there is sufficient evidence to show that the occurrence of rheumatism calls for a careful and thorough examination of the drainage of the patient's residence.

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### III.—SURGERY.

Langhorne: Intussusception of Nine Days' Duration successfully treated by Inflation. (*The Lancet*, May 3, 1890.)

The child became suddenly sick, suffering from diarrhoea and vomiting; then blood and slime were passed from the bowel accompanied with much tenesmus. The abdomen was swollen, tympanitic, and tender.

Under chloroform the invaginated gut could be distinctly felt per rectum; and a sausage-shaped tumor was made out in the left iliac fossa.

The child seemed to be dying, and, without hope of success, inflation was tried.

With an ordinary bellows the rectum was slowly distended, while one hand was kept on the abdomen.

After two or three minutes the tumor suddenly disappeared. Small doses of opium were prescribed. The next day all vomiting ceased, and the child made an uninterrupted recovery.

This case is worthy of record because of the length of time the gut was invaginated. It seems that adhesions ought to have formed, and that rupture would have followed the attempt to reduce by inflation.



**Suckling: Syphilitic Epiphysitis.** (*The Lancet*, March 8, 1890.)

Dr. Suckling showed at the Midland Medical Society an infant a few weeks old, with a syphilitic rash on the face and buttocks, and with a hard swelling at the lower end of each humerus. The swelling was exquisitely tender when the child was first seen, and the child cried when either upper extremity was touched. The rash and swellings had much diminished under the administration of hydrargyrum cum creta, a grain twice a day being given. Dr. Suckling stated that he frequently met with such cases, but he could not obtain any history of injury, and he fully believed that the epiphysitis was purely syphilitic.

In the majority of cases the lesion was one-sided, and the lower epiphysis of the humerus was the one most commonly affected.

Recovery almost invariably followed the administration of mercury in sufficient doses, and prolonged for some weeks.

**Batchelor, W. A.: Mucous Polypi of the Bladder in a Child: Suprapubic Operation: Death on the Twenty-third Day.** (*Phila. Med. News*, 1890, lvii. 65.)

The patient was a boy, four and a half years old. The symptoms dated back eight months, and were frequent micturition, with much vesical tenesmus and pain; some dribbling of urine (never bloody); prepuce elongated. Micturition easier when the body was in the horizontal position. Microscopical examination of the urine revealed nothing more than evidences of cystitis. Instrumental examination for stone was negative. On rectal examination the bladder felt thick and boggy, even after the urine had been drawn off by a catheter. There was suprapubic percussion dulness even after all the urine had been withdrawn from the bladder.

A suprapubic cystotomy was performed, and the bladder was found completely filled with pedunculated mucous polypi, varying in size from one-eighth to one inch in diameter, and variously attached to the base of the bladder, but grouped more closely about the vesical neck. These were carefully removed with the finger-nail and forceps, and when removed half filled a one-ounce quinine bottle. The hemorrhage was unimportant. The bladder wall was not sutured. Two or three deep sutures closed the abdominal wound about a Trendelenburg drainage-tube,—no perineal drainage nor catheter in the urethra. The drainage tube was removed on the sixth day. On the seventeenth day there was slight fever and some looseness of the bowels; the next day there were two general con-

vulsions, with loss of consciousness, lasting two or three minutes; looseness of the bowels continued, with pronounced though not excessive tympanites. On the twenty-third day the patient died with no more marked symptoms than those above described.

Dawson, W. W.: Some Points on Tracheotomy. (*Journ. Am. Med. Assoc.*, 1890, xv. 55.)

Conclusions: 1. Tracheotomy is our only remedy for foreign bodies, and in cases of obstruction from disease where O'Dwyer's intubing apparatus cannot be obtained, or in cases where intubing is not practicable. 2. The incision should be made by transfixion, and then the connective tissue treated by a blunt instrument or a steel director. 3. Where should the operation be made? In the upper or middle portion of the trachea. 4. When the isthmus is hypertrophied or vascular, ligate it on either side, and then cut it in median line between the ligatures. 5. What kind of knife should be used? A sharp-pointed curved bistoury for both the skin and trachea. No hemorrhage follows its use in dividing the skin, and in opening the trachea it steadies the tube and dispenses with the "forceps, hook, or thumb and fingers." 6. How to keep the way open? If a foreign body is not promptly expelled, place a loop of silk thread on either side and tie these ligatures behind the neck. So also, in cases of disease where the tube does not act well, Brainard's ligatures may be substituted.

Oliver, J. C.: Litholapaxy in a Girl Six Years of Age. (*Lancet-Clinic*, Cincinnati, 1890, lxiii. 624.)

She complained of pain in micturition with great straining, the passage at various times of blood and the constant presence of pus in the urine. At times she was unable to cause the urine to pass, and during micturition the stream would sometimes suddenly stop. There was a prolapse of the rectum.

Two stones, consisting of uric acid with a small amount of calcium phosphate, were removed, one on December 7, and the other on January 10. The urethra was dilated and the stone crushed and removed piece by piece. A Biglow evacuator was used to assist in its removal. The fragment weighed seventy-five grains. The patient made a rapid and perfect recovery.

Wharton: A Case of Polypus of the Rectum. (*Annals of Gyn. and Ped.*, 1890, iii. 483.)

The patient was a boy six years old. The tumor occasionally protruded from the anus as a purplish-red mass, and

caused excessive straining at stool and the passage of a considerable quantity of mucus, at times stained with blood.

The polypus was about the size of a pigeon's egg, and sprang from the posterior wall of the rectum about an inch above the internal sphincter, and was attached to it by a broad pedicle about half an inch in length. It was removed without difficulty and the patient was discharged from the hospital at the end of a week, completely relieved of all the symptoms due to the presence of the polypus.

Dodge, C. L.: A Case of Imperforate Anus in which the Fæces were passed through the Penis, and Later through the Umbilicus: Autopsy. (*Phila. Med. News*, 1890, lvi. 626.)

There was complete absence of an anus, and the skin was perfectly smooth from the end of the coccyx to the scrotum, and there was no raphe. The child urinated naturally and also passed its fæces through the penis. At the end of three weeks, urine and fæces were passed from the umbilicus as well as the penis. It died at the age of five weeks. There was also a deformity of the right forearm and of the right leg. The autopsy showed that the rectum terminated in a *cul-de-sac*, at the lower end of which was a fistulous communication with the bladder. The bladder consisted practically of a tubular sac, which was continuous with the urachus. The latter was still pervious, and thus allowed the urine and fæces to escape at the umbilicus.

McDonagh, G. R.: Obstructive Laryngitis: Tracheotomy—Continuance of the Use of the Tracheotomy Tube a Necessity—Intubation—Recovery. (*Canadian Practitioner*, 1890, xv. 191.)

The patient was a boy, two years old, who had tracheotomy done for severe laryngeal obstruction. Its cause was not positively determined, but the presence of a foreign body in the air-passages was suspected. Several attempts were made to remove the tube, the first one being made on the ninth day after the tracheotomy. But the dyspnoea was so marked that the tube had to be replaced in the wind-pipe.

Thirty-five days after the tracheotomy, the O'Dwyer tube was introduced into the larynx and the other tube removed. At all times he breathed freely, but at first the presence of the tube caused a great amount of irritation, which, however, gradually grew less and less. He was able to take nourishment, consisting of milk, custard, and jelly, without difficulty. Three days after the intubation, he coughed the tube out and



breathed freely for an hour and a half; when the dyspnoea again came on and the tube was replaced. At 5.30 P.M. he again coughed the tube out, and has since been able to get on without it. A letter from the father of the child, twenty-nine days after the first intubation, stated that the child was practically quite well.

Powers, C. A.: On Conical Stump after Amputation in Children, with Especial Reference to its Physiological Causes and Prognosis. (*N. Y. Med. Rec.*, 1890, xxxvii. 641.)

The following propositions are submitted:

1. Amputation through the arm or leg in children may be followed by a conical condition of the stump, and this sequel is a probability rather than an improbability.

2. This conicity may be physiological, and independent of inflammation or retraction in the soft parts, or of osteophytic deposit at the end of the bone.

3. The younger the child and the nearer the seat of the amputation to the upper epiphysis of the limb, the greater the probability of early conicity. These factors should be considered when making prognosis.

4. The weight of extant authority favors flaps of excessive lengths, but this measure may not prevent development of the conical condition.

5. When the conical condition is present, the only suitable condition consists in the resection of a sufficient portion of the bone.

6. Successive reamputations may be required.

7. The above considerations may apply, but with very much less of force, to amputations through the forearm or thigh.

Koplik, H.: Arthritis complicating Vulvo-Vaginal Inflammation in Children. (*N. Y. Med. Journ.*, 1890, li. 678.)

He reports two cases, both females, one aged five years and the other three and a half. In the first case, the joints involved were the right shoulder, wrist, and knee; in the second case, the right ankle. In both cases, an examination of the genital discharge revealed diplococci singly and in pairs and groups in the mucus and in the pus cells, which answered in stain and grouping to the descriptions of the gonococcus of Neisser. These were the only cases that were met in a material of one hundred children, all below the age of ten years, who were suffering from vulvo-vaginal inflammation.

## Bibliography.

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CYCLOPÆDIA OF THE DISEASES OF CHILDREN, Medical and Surgical, Volume IV. Edited by John M. Keating, M.D. Royal 8vo. Pp. 1053. 1890: J. B. Lippincott Company, Publishers, Philadelphia.

This, the final volume of what may be styled one of the grandest contributions to the medical literature of the nineteenth century, is not only up to the high standard aimed at in the first and succeeding volumes, but is the fitting climax of a well-accomplished task. It is divided into four parts, the first two comprising the organs of special sense, the ear and the eye, the third hygiene, and the fourth the diseases of the nervous system. The Diseases of the Ear in Children has been admirably written by that celebrated American aurist Charles H. Burnett, M.D., who has contributed so much to the enrichment of American medical literature, and requires no further comment.

The Diseases of the Eye have been divided into three sections, after the manner of many German treatises upon ophthalmology, the articles upon the Affections of the Eyelids, Lachrymal Apparatus, Conjunctiva, and Cornea being contributed by G. E. de Schweinitz, M.D.; the Diseases of the Eye, by Charles S. Turnbull, M.D., and George M. Gould, M.D., and the Ophthalmoscopy, by Charles A. Oliver, M.D. The names of these specialists constitute a sufficient guarantee to the rich quality of the material presented to the reader.

It is difficult to speak of especial excellence where the articles are so uniformly good, but the sections on the Affections of the Eyelids, etc., is written in an exhaustive, painstaking style, and reveals a thorough knowledge of the subject dealt with.

It is, however, to be regretted that the section on the Diseases of the Eye, which includes so many important pathological lesions, refraction, and operations upon the eye, should be so much condensed,—a clearly unequal division.

The section on Ophthalmoscopy is remarkable for its thoroughness and clearness, and represents the most complete statement of the ophthalmoscopic condition in the local diseases and symptomatic disorders of the eye to be found anywhere in a system of this character.

The third part of the volume on Hygiene, besides an extensive article upon Physical Development, by the editor and James K. Young, M.D., contains interesting and valuable monographs upon Massage, by William A. Edwards, M.D.; Prophylaxis of Diseases of Children, by J. Wellington Byers, M.D.; School-Hygiene, by D. F. Lincoln, M.D.; Construction of Children's Hospital, by Lindley Johnson; Juvenile Crime, and Public Methods of Prevention and Reclamation, by J. Percy Keating, Esq.; and Medico-Legal Testimony, by Jerome Walker, M.D. The

first article of this part upon Physical Development is in many ways unique. It includes sections on anthropometry, exercise, animal mechanics, the effects of exercise and training, besides a section upon gymnastics, in which the Swedish Movements are exhaustively treated. The illustrations in this part of the work have been enriched by photographs selected with especial care from the Muybridge collection of the University of Pennsylvania, from special drawings by Mr. Faber, and by photographs of a young model especially trained for this purpose. The result is a section which merits considerable attention, and contributes greatly to the value and usefulness of the volume.

The other articles in this section have been ably handled by men for the wise selection of whom the editor is to be congratulated. This is especially true of the article upon Juvenile Crime, and Public Methods of Prevention and Reclamation, which is a timely and forcible exposition of a subject about which the general practitioner is but meagrely informed.

The last part, if separated from the rest, might be considered in itself a System of Diseases of the Nervous System, for nowhere in the wide range of medical literature can such a complete and valuable collection of monographs on nervous diseases be found.

Here again it is difficult to select any for special comment so uniformly excellent are they. Simply to mention the articles *seriatim* is to testify to the strength and value of contributions, and the acumen and professional ability of this galaxy of neurologists and alienists.

We must, however, call attention to the General Introduction to the Diagnosis of Diseases of the Nervous System, by Allan McLane Hamilton, M.D.; Myelitis, Spinal Meningitis, and Hemorrhage into the Spinal Cord or Membranes, by Mary Putnam Jacobi, M.D.; Convulsions in Infancy and Childhood, by Morris J. Lewis, M.D.; and Hysteria, by Charles K. Mills, M.D. Of all the articles in this remarkable section, the reviewer has been most impressed with the one upon Poliomyelitis Anterior, by Wharton Sinkler, M.D., which for scientific accuracy and practical value is by far the best contribution to the knowledge of the subject extant.

It is, however, to be regretted under the etiology that no mention is made of the possible nature of the cause of the inflammation met with in the anterior horns of the gray matter, other than that the epidemic cases were identical "with epidemics of diseases whose infectious character is well recognized," and that no reference is made to the paper of Mathis (*Recueil de Méd. Vétérinaire*, April 15, 1887.) It is possible the very practical nature of the article precluded any reference to a subject which at best is only a suggestion.

On the whole, the editor is again to be commended on the successful completion of a great labor, the publishers to be complimented on the ornamental and substantial character of the publication, and the practitioner to be congratulated on the possession of a work of such an authoritative character and great practical value.

J. K. Y.



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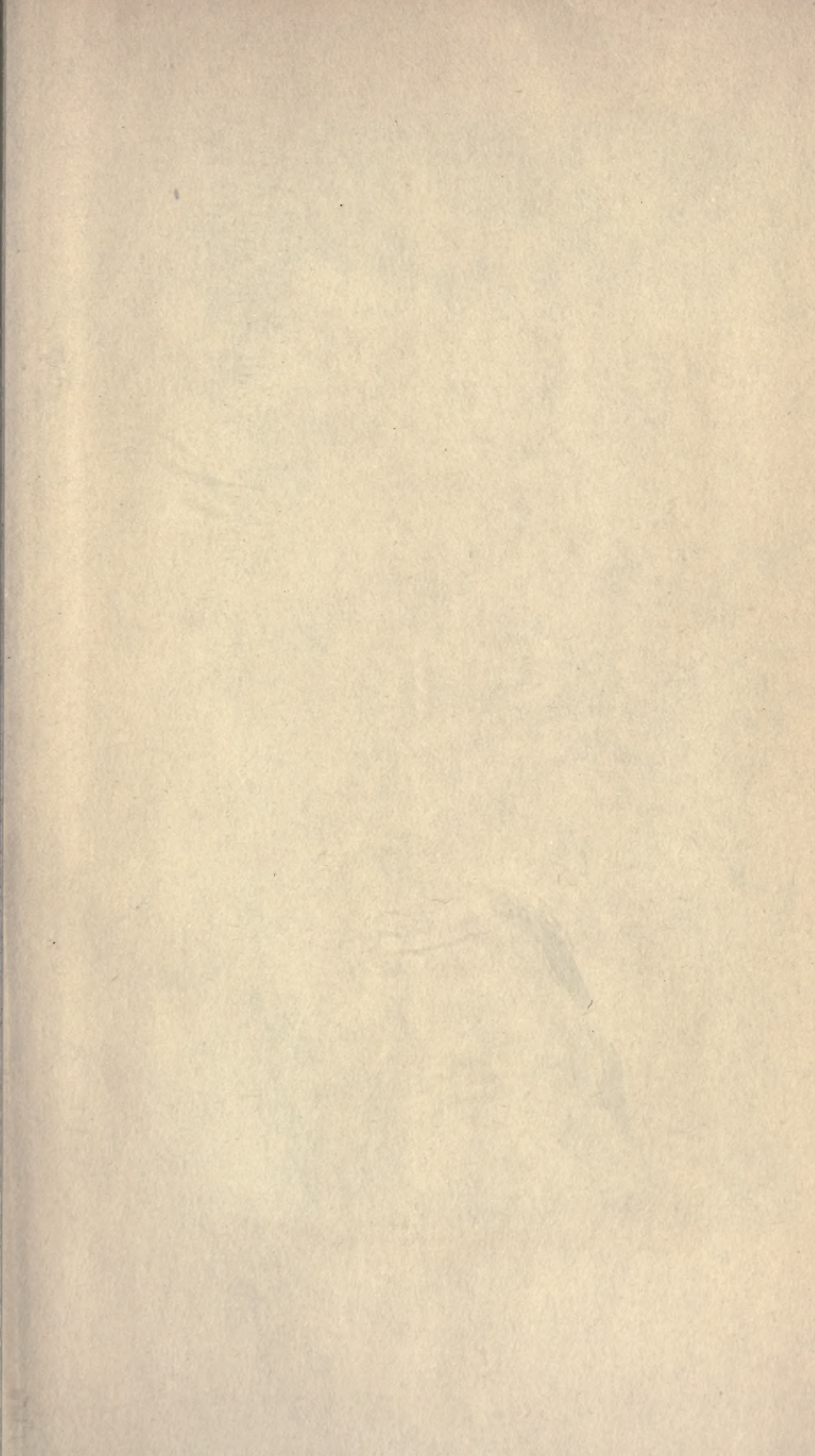
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